For each major importing and exporting country, breakdowns of imports and exports will be presented in the accompanying *Discussion Paper*.

6.4 Market profiles

6.4.1 European Union

Since the negative results of 1993-1994, the EU15 balance of trade of SPWPs has been positive (graph 6.4.1). However in 1997, individually, only two products had a positive balance: coopers' products (barrels) and furniture, while wood mouldings, pallets and cases and joinery and carpentry were negative (graph 6.4.2). The EU's exports of SPWPs are in steady increase (graph 6.4.3).

The contribution of the furniture and seating (mainly Italian) is out of proportion with the other headings and has the major weight on the positive side (table 6.4.1 and graph 6.4.4).

Germany is the larger European furniture producer and consumer but Italy exports twice as much.

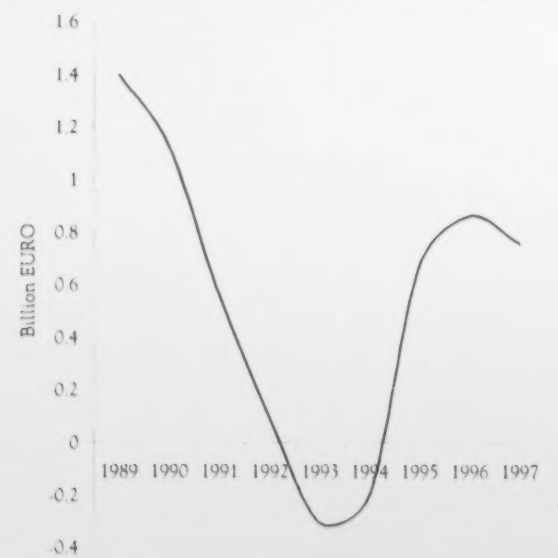
Several industrial sectors had a sustained growth in the recent years. This is the case in flooring, a minor sector in terms of the quantity of wood used, but in steady increase in production and trade (graph 6.4.5). The expansion of the wood flooring is driven by fashion and its anti-allergic benefits. The market is promising and the small percentage of wood flooring in Europe (4.7% in 1997) is expected to grow fast.

Multiple-layer (laminated) flooring has had a spectacular growth in recent years. Solid flooring is also growing at a lesser rate, while mosaic and laminated-parquet are nearly stagnant (graph 6.4.6).

Much of the supply of the flooring plants is traditionally bought in friezes (narrow, random-length strips).

GRAPH 6.4.1

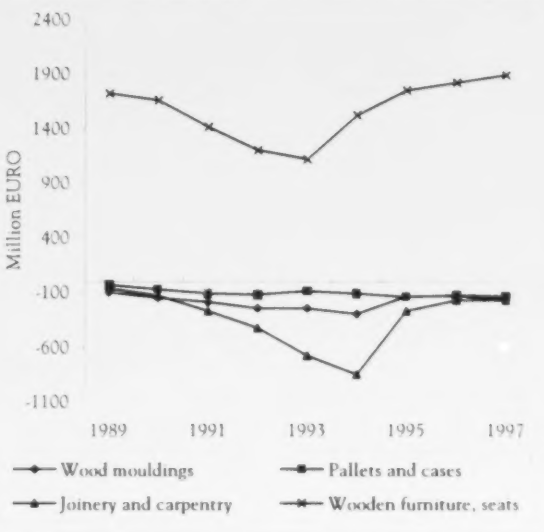
EU15 balance of trade for selected SPWPs, including wooden furniture, 1989-1997



Source: COMEXT, 1999.

GRAPH 6.4.2

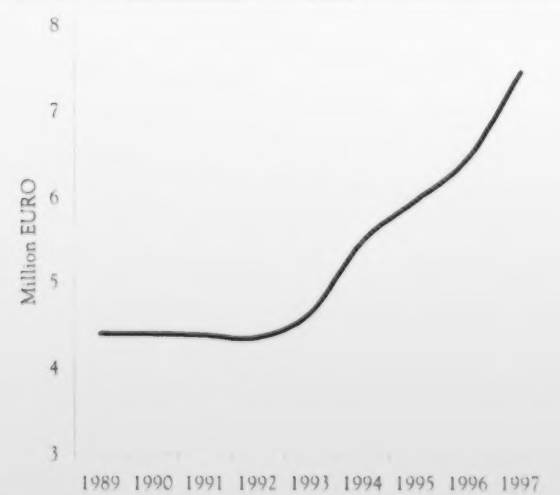
EU15 balance of trade, 1989-1999



Source: COMEXT 1999

GRAPH 6.4.3

EU15 exports of SPWPs, 1989-1997



Source: COMEXT, 1999.

Hardwood dimension[2] is now the supply of the most modern furniture plants, of which the high-productivity lines require prepared and homogeneous raw material.

The trade of continuously shaped wood is expanding in the EU (graph 6.4.7). In 1997, 40% of the total EU imports of profiled wood came from Indonesia and

TABLE 6.4.1

EU furniture market, 1998

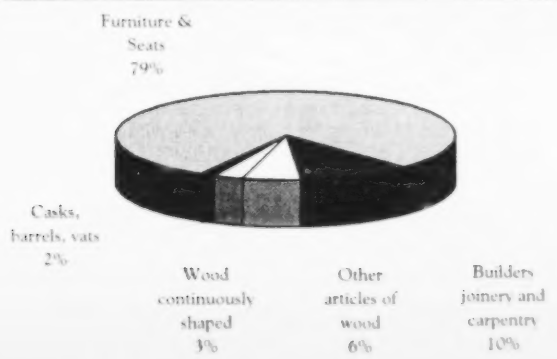
(Value in million euro)

	Production	*Consumption*	*Imports*	*Exports*
Austria	1,986	2,291	1,124	819
Belgium	1,887	2,470	1,727	1,144
Denmark	2,348	1,267	563	1,644
Finland	963	922	206	246
France	7,164	8,086	2,705	1,783
Germany	18,181	20,116	5,441	3,506
Greece	935	1,070	160	24
Ireland	310	402	192	100
Italy	15,189	8,529	606	7,266
Netherlands	2,194	2,907	1,224	510
Portugal	935	899	248	284
Spain	4,904	4,273	495	1,126
Sweden	1,634	1,212	643	1,065
United Kingdom	6,678	7,861	2,281	1,098
Total	65,308	62,305	17,615	20,615

Source: CSIL Milano (Furniture Industry Research Institute) as reported by the European Panel Federation, 1999.

GRAPH 6.4.4

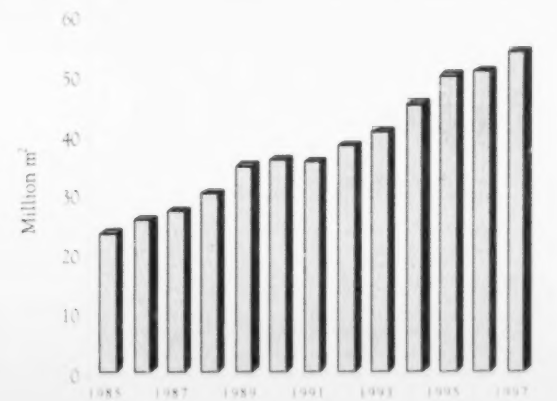
EU15 exports of SPWPs, 1997 breakdown by products


Furniture & Seats 79%
Casks, barrels, vats 2%
Wood continuously shaped 3%
Other articles of wood 6%
Builders joinery and carpentry 10%

Source: COMEXT, 1999.

GRAPH 6.4.5

EU15 production of wood flooring, 1985-1997



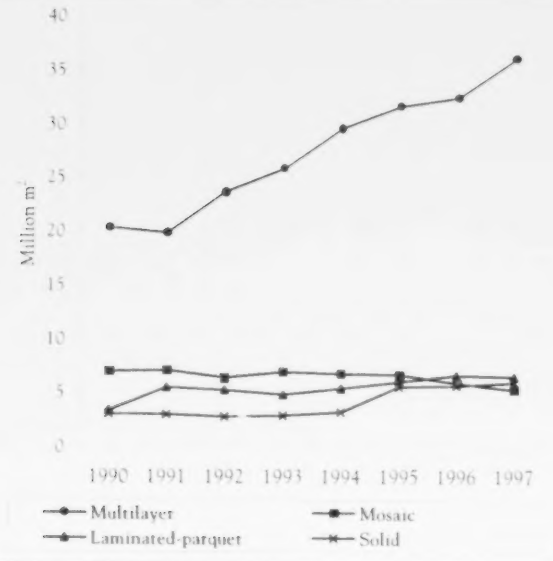
Source: Fédération Européenne du Parquet,1999.

[2] Dimension is a semi-finished piece of wood of fixed width, thickness and length, with specified tolerances of moisture content.

Malaysia. Several eastern European countries (e.g. Czech Republic, Croatia, Estonia and Romania) are making considerable progress in exporting profiled wood to the EU. Italy is the major European exporter of profiled wood, mainly hardwood.

GRAPH 6.4.6

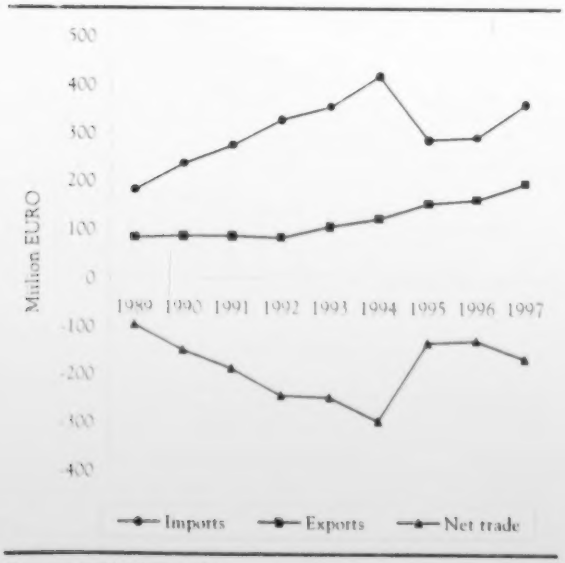
European wood flooring production by type, 1990-1999



Source: Fédération Européenne du Parquet, 1998.

GRAPH 6.4.7

EU15 trade of mouldings, 1989-1997

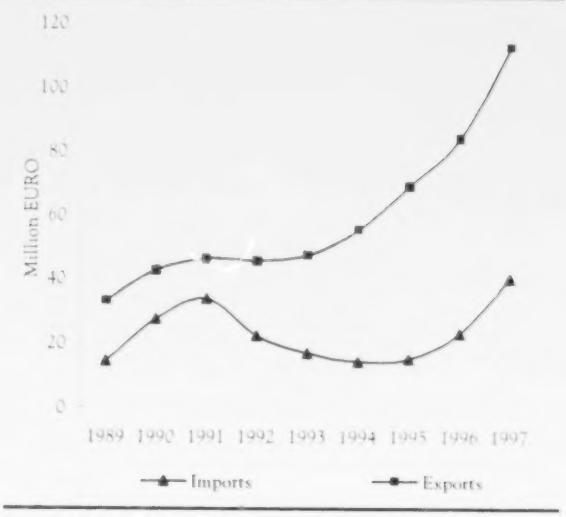


Source: COMEXT, 1999.

Another sector in continuous growth is the barrel industry (graph 6.4.8). France makes up 66% of the total ECE exports of coopers' products (barrels, casks and vats). In 1997, the French production represented more than 500,000 barrels, manufactured from 50,000 m^3 of staves, obtained from 250,000 m^3 of high quality logs (*Annuaire des Industries du Bois*, Union des Industries du Bois, 1999).

GRAPH 6.4.8

EU15 trade of barrels, 1989-1997



Source: COMEXT, 1999.

6.4.2 United States

As shown before, the United States is the largest importer of SPWPs, including furniture, and the second largest exporter behind Canada. The two groups with the highest trade value are continuously shaped wood (mouldings) and joinery and carpentry (graphs 6.4.9 and 6.4.10).

Since 1991, both imports and exports have been in constant growth, with a negative balance of trade for all SPWPs (graph 6.4.11). The United States is a net importer of furniture: $6.0 billion imported in 1998 versus $850 million exported.

Amongst the wood products, two items, joinery and carpentry and continuously shaped wood account for around 60% of imports and exports (table 6.4.2).

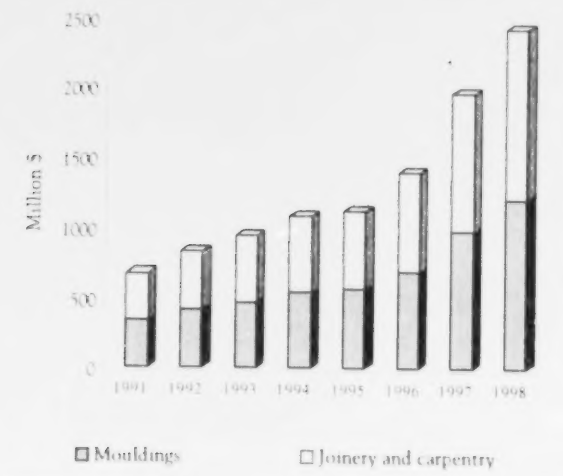
Canada is by far the main supplier of joinery and carpentry with 73% of the value of exports to the United States in 1998 (table 6.4.3). Other Central and South American countries account for 11%.

Canada is also the main supplier of profiled wood with 29% of the supply in 1998, followed by Chile (18%)

(table 6.4.4). Other Central and South American countries account for 25%.

GRAPH 6.4.9

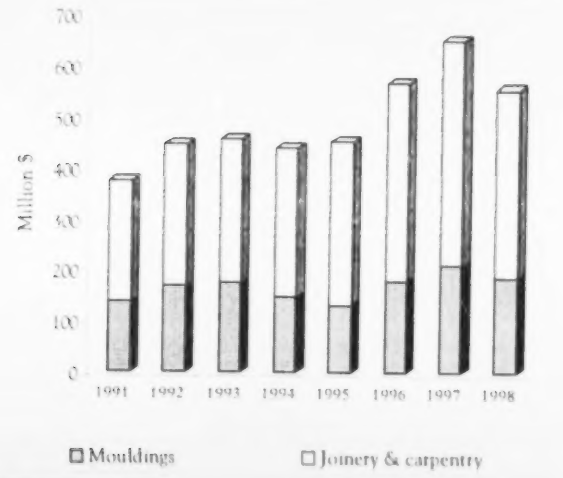
United States imports of SPWPs, 1991-1998



Source: Comtrade, 2000.

GRAPH 6.4.10

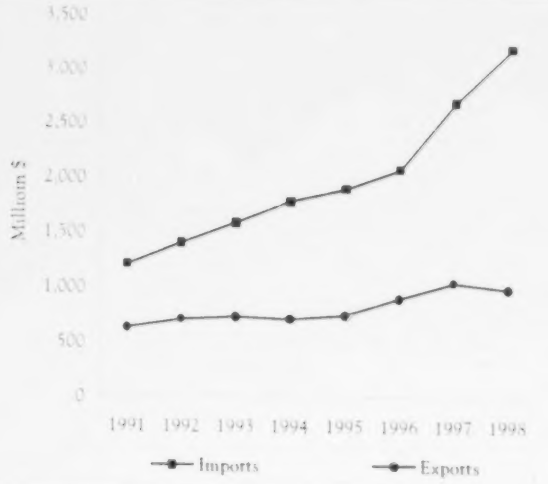
United States exports of SPWPs, 1991-1998



Source: Comtrade, 2000.

GRAPH 6.4.11

United States trade of SPWPs, excluding furniture 1991-1998



Source: Comtrade, 2000.

TABLE 6.4.2

United States, SPWP imports, excluding furniture,1998 ranked by value

(Million $)

Builders joinery & carpentry	1,212
Other articles of wood	743
Continuously shaped wood	695
Marquetry	199
Packing cases, pallets	113
Barrels, casks	104
Tableware	86
Tools and handles	41

Source: Comtrade, 2000.

TABLE 6.4.3

Main exporters of joinery and carpentry to the United States, 1998

(Million $)

Canada	891
Indonesia	50
Mexico	39
Brazil	35
Malaysia	31
Chile	26
Costa Rica	22
Sweden	15
China	12

Source: Comtrade, 2000.

TABLE 6.4.4

Main suppliers of profiled wood to the United States, 1998

(Million $)

Canada	203
Chile	124
Mexico	98
Indonesia	62
Brazil	59
Malaysia	34
New Zealand	30
Italy	16
China	13
Argentina	7

Source: Comtrade, 2000.

TABLE 6.4.5

United States, SPWP exports 1998

(Million $)

Builders joinery & carpentry	366
Continuously shaped wood	188
Other articles of wood	180
Marquetry	98
Barrels, casks	70
Packing cases, pallets	55
Tableware	18
Tools and handles	18

Source: Comtrade, 2000.

6.5 Conclusion

In the ECE region the trade in SPWPs is growing faster than trade in primary products. Many major forest products producers are seeking to maximize value-added processing and minimize exports of primary products. This trend is particularly evident in tropical countries. Trade, and especially production, of SPWPs will continue to be difficult to measure due to difficulties in identifying the portion of wood in final products. Nevertheless the increasing importance of secondary processing merits attention as a focus on only primary-processed products gives too narrow a view on wood products production, consumption and trade in the ECE region.

In addition, some manufacturers are integrating primary processing into their production of SPWPs in order to control raw material supply. Conversely primary product manufacturers, such as sawmills, are investing in value-added processing, for example in manufacturing hardwood dimension. This vertical integration of primary and secondary operations is an important structural change in the sector. One consequence is that statistics on primary processing, e.g. sawnwood produced, only give a partial picture of reality. This is again an impetus to follow more closely the production and trade of SPWPs.

A Geneva Timber and Forest Discussion Paper is envisaged in 2000 in which the author will expand on the topics addressed in this chapter.

Chapter 7
Wood Raw Material – Production, Trade and Consumption

Highlights

- Production of roundwood in the ECE region, at 1.2 billion m^3 annually, is far below the volume of annual growth.
- The demand for roundwood in western European countries is increasingly dominated by an ever smaller number of large wood processing companies, leading to weaker pricing power of the traditional small private and municipal forest owners and state forest services.
- The social demand for non-wood benefits is increasing in forests near urban areas, which leads to additional pressure on the forest owners and their incomes in these areas.
- Market forces have stimulated central and eastern European countries and the CIS to, at least temporarily, increase exports of roundwood. This is a major determinant for current developments in roundwood markets of the ECE region.
- Since 1996 exports to western Europe from the CIS and central and eastern European countries increased rapidly, by 36.2% and 9.5% respectively. These exports influence the traditional roundwood trade flows in other parts of ECE region and outside of it.
- If indications of about 20 to 30 million m^3 in illegal cuttings in the CIS countries are correct, they would mainly reduce the tax revenues, and not the sustainable level of removals.
- CIS roundwood production and consumption decreased through 1998, but turned around and increased in 1999 by 13.8% and 7.9% respectively.
- The dynamic development of roundwood exports in the CIS and central and eastern European countries should lead in the medium term to increasing income as a base for improving processing equipment, productivity and domestic purchasing power.
- Roundwood production and trade accelerated in Europe in 2000 following the extensive windthrow from the 1999 storms.

Introduction

As a background to the description of primary-processed products, this chapter describes the main developments in production and trade of roundwood. Production is used here as a synonym for removals, which are defined as forest roundwood volumes felled and removed from the forests. When reported, removals include personal needs of forest owners, which in some countries could reach significant volumes.

Distinction between the types of products (logs, pulpwood [1], wood fuel and other industrial roundwood) is rather difficult both in practice and statistically. The structure of roundwood products in the statistics is based on long-standing traditions. It starts from structuring roundwood in the direction of use. With the changes in wood processing technologies during the last decades this distinction is less and less valid. For example pulpwood with larger diameter can be used as small-diameter sawlogs. For these reasons it is often impossible to make direct links between particular roundwood products and their use in the wood processing industry.

In 2000 the situation in the European roundwood markets is heavily influenced by an oversupply of roundwood caused by the nearly 200 million m^3 windthrow of December 1999 (see special chapter 3). This chapter describes roundwood production, trade and consumption mainly through 1999, focussing on the development between 1998 and 1999, the latest period for which statistics are available.

In light of the differences in roundwood production and trade between various countries of the ECE region, several sub-regions were defined for this chapter: EU/EFTA, "other Europe" (otherwise known as central and eastern European countries), the CIS and North America. A listing of countries in the ECE region may be found in the annex.

The data quality differs between countries, products, and years. So far, only a few countries of the CIS region provide data to the timber database, including the largest producer, the Russian Federation. For most of the CIS countries the secretariat has estimated roundwood removals based on TBFRA[2] and FAO data. In future, the secretariat will attempt to collect more reliable data from the CIS and "Other Europe" countries, considering their dynamic development and possible influence to the European timber markets.

Even in those CIS countries which supplied data, the economic and social situation is such that the possibilities of errors (e.g. due to unrecorded production and trade) cannot be excluded. In order to compare regions over time the secretariat also made trend calculations for a few important countries, which did not provide complete, current wood raw materials data via the Joint Forest Sector Questionnaire (for example Canada). Possible inconsistencies between grand totals for roundwood and totals from sub-items are caused by the fact that some countries provide only grand totals without any desegregation by products. In some cases it was impossible to calculate an apparent consumption, because of missing data for one of the items: production, exports or imports.

7.1 ECE region developments

The ECE region is an important part of global forest resources. Nearly 43% of the global forest area is located in ECE countries. More than 1/3 of global removals is produced in this region (table 7.1.1). The share of global removals is decreasing for the whole region and for all of the analysed sub-regions, excluding the "Other Europe" countries, whose share of removals has shown a slight increase from 1995 to 1998.

TABLE 7.1.1

Ratio between ECE and global roundwood removals, 1995-1998

(% of global removals)

Sub-regions	*1995*	*1996*	*1997*	*1998*
EU/EFTA	8.43	7.85	8.05	8.14
Other Europe	3.07	3.15	3.25	3.31
CIS	4.21	3.87	3.90	3.36
North America	21.39	20.94	20.43	20.80
Total	37.10	35.81	35.62	35.61

Sources: ECE/FAO TIMBER and FAO databases, 2000.

Annually, nearly 1.2 billion m^3 of roundwood is harvested in ECE countries, which corresponds to 0.8 m^3 per hectare of forest area (TBFRA 2000). Depending on forest stand conditions and the accessibility of forests, the harvesting rate differs between regions. Possibilities for sustainable roundwood supply in the ECE region as a whole, and the sub-regions as well, estimated on the basis of net annual increment, are much higher than current harvests. The potential supply is not used so far, mainly for economic reasons. For example, in the case of Germany present production could be expanded by two-thirds while remaining in the framework of sustainable forest management. However, information exists about local and temporary over-cutting in some areas of the

[1] In contrast to the last Review this chapter includes pulpwood.

[2] Temperate and Boreal Forest Resources Assessment.

ECE region, more specifically illegal cuttings within some CIS countries.

Changes in the eastern Europe policy framework and the merging process of wood processing enterprises are the major determinants for current changes in roundwood markets of the ECE region.

7.1.1 Roundwood production

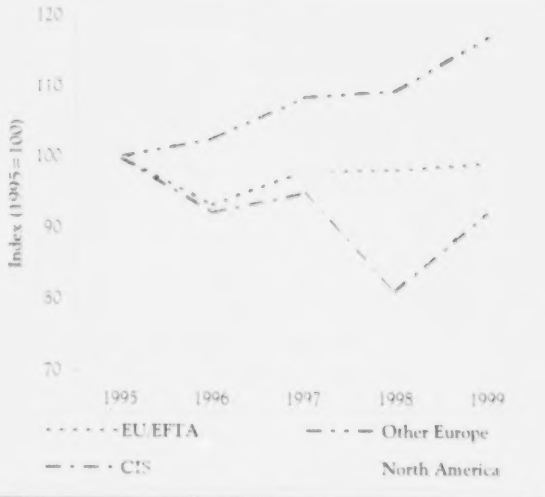
The central and eastern ("Other") European countries are moving relatively fast towards market economies and roundwood production is characterised by dynamic growth (graph 7.1.1 and table 7.1.2). The production of roundwood in the "Other Europe" region grew by 4.1 million m^3 per year between 1995 and 1999, accelerating by 7.1% from 1998 to 1999 (table 7.1.4). In this region removals amounted to 115.7 million m^3 in 1999.

In comparison to the more or less stable increasing development in "Other Europe", roundwood production in the CIS is still unsteady. The main reason is the fluctuation of domestic demand. Despite strong growth of 13.8% in 1999, production reached about 125 million m^3, only 92% of the 1995 level and only 33% of the 1990 removals.

In contrast to the CIS, development in North America and the EU/EFTA appears stable. These two regions are still the leading producers of roundwood in the ECE region, with about 690 and 270 million m^3 removals respectively.

Most of the harvested roundwood volume is used or traded locally, because of the high transportation costs in comparison to processed timber. Only about 7% of ECE

GRAPH 7.1.1
Development of roundwood production in the ECE area by regions, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

TABLE 7.1.2
Production (removals) of roundwood by selected countries in the ECE Region, 1995-1999
(1,000 m^3)

Region	Country	1995	1996	1997	1998	1999	Average growth rate	% Change 1998 to 1999
EU/EFTA	Sweden	63,600	56,300	60,200	60,600	58,700	-550	-3.1
	Finland	49,894	46,272	51,798	53,660	53,851	1,530	0.4
	Germany	39,343	37,014	38,207	39,052	37,634	-138	-3.6
	France	36,061	33,143	34,932	35,527	36,380	302	2.4
Total		**270,833**	**252,529**	**265,388**	**266,186**	**268,921**	**983**	**1.0**
Other Europe	Poland	19,088	20,316	21,635	23,107	24,300	1,322	5.2
	Turkey	19,279	19,411	18,050	17,668	17,617	-507	-0.3
	Czech Republic	12,365	12,600	13,491	13,991	14,203	507	1.5
	Romania	12,178	12,250	13,529	11,649	12,677	40	8.8
Total		**98,726**	**101,249**	**107,073**	**108,053**	**115,684**	**4,072**	**7.1**
CIS	Russian Federation	116,510	101,750	113,798	95,000	111,000	-1,777	16.8
	Belarus	10,455	15,707	7,585	7,765	7,375	-1,410	-5.0
	Ukraine	6,318	6,252	6,053	6,053	5,920	-100	-2.2
Total		**135,295**	**124,710**	**128,465**	**109,816**	**124,971**	**-3,554**	**13.8**
North America	United States	499,310	490,601	485,880	494,016	500,745	628	1.4
	Canada	188,346	183,546	187,753	185,955	185,659	-297	-0.2
Total		**687,656**	**674,147**	**673,633**	**679,971**	**686,404**	**332**	**0.9**
Grand Total		**1,192,510**	**1,152,635**	**1,174,559**	**1,164,026**	**1,195,980**	**867**	**2.7**

Source: ECE/FAO TIMBER database, 2000.

roundwood production is traded. About 65% of the industrial roundwood exports and 68% of the imports in ECE region is traded inside the region. There are significant year to year changes in roundwood trade, which the secretariat tried to analyse in the framework of this report, using FAO direction of trade data for industrial roundwood production (tables 7.1.3and 7.1.4).

Unfortunately some data from the FAO database cannot be analysed in enough detail, for example exports from "Other developed" countries to the EU/EFTA region, which amounts to 61% of the exports from these countries. Table 7.1.3 shows the structure of exports by destination, table 7.1.4 gives the structure of imports by delivering countries.

7.1.2 Roundwood trade

Based on FAO statistics, the ECE region has 55% of the world industrial roundwood trade. Roundwood imports in the ECE region as a whole increased by 10.7% between 1998 and 1999 (table 7.1.5). This increase is lower than the increase in the rate of exports, which amounts positive to 15.1%. With only 8.3 million m^3 net trade the region is still a net exporter of roundwood. The picture between sub-regions is quite different.

The largest exporter of the ECE region is the CIS region, with more than 30.2 million m^3 roundwood in 1999. With a 36.2% difference between 1998 and 1999, the CIS region has the highest growth rate for roundwood exports. More than half of industrial roundwood exports from the CIS goes to EU/EFTA countries based on a high market potential in between these two regions. A startling 92% of industrial

TABLE 7.1.3

Industrial roundwood trade flows, exports by destination, average 1995-1998

(%)

	Exporting region						
Importing Region	*EU/ EFTA*	*Other Europe*	*CIS*	*North America*	*Non-ECE*	*Other developed*	*Other developing*
EU/EFTA	**92**	92	56	2	10	61	25
Other Europe	1	**1**	3	0	0	4	3
CIS	0		**0**			1	
North America	0		0	**28**	1	21	4
Non-ECE	3	0	39	69	**83**	6	59
Other developed	1	6	1	0	2	**5**	2
Other developing	2	1	0	1	4	2	**8**
Total, %	100	100	100	100	100	100	100

Source: FAO database, 2000.

TABLE 7.1.4

Industrial roundwood trade flows, imports by countries of origin, average 1995-1998

(%)

	Exporting region							
Importing Region	*EU/ EFTA*	*Other Europe*	*CIS*	*North America*	*Non-ECE*	*Other developed*	*Other developing*	*Total %*
EU/EFTA	**23**	20	28	1	4	18	7	100
Other Europe	8	**7**	37	1	5	25	18	100
CIS	12		**0**			88		100
North America	0		0	**55**	2	37	7	100
Non-ECE	1	0	21	23	**36**	2	18	100
Other developed	8	24	13	1	18	**26**	9	100
Other developing	9	6	2	6	27	12	**38**	100

Source: FAO database, 2000. **intra trade**

roundwood exports from "Other Europe" go to the EU/EFTA region. Roundwood exports from "Other Europe" increased rapidly by 9.5% between 1998 and 1999. The main reasons are lower prices, especially for low quality products, and the comparatively short transport distances from eastern suppliers to western markets. In fact wood quality is quite high but the ability to meet other specifications, such as length, diameter, product assortment or delivery deadlines, is low.

In relation to this, the EU/EFTA region is the biggest importer. Imports here increased since 1996 and grew further, by 8.9 %, between 1998 and 1999. The imports are coming mainly from the CIS (28%) and the "Other Europe" region (20%) as well as from other developed countries. The EU/EFTA region receives about 23% of industrial roundwood from countries inside this region and exports 92% to the countries of the same region; in other words there is considerable intra regional trade.

TABLE 7.1.5

Roundwood exports and imports by selected countries in the ECE Region, 1997-1999

(1,000 m³)

Region	*Country*	*1997*	*1998*	*1997*	*1998*	*1999*	*Average growth rate*	*% Change 1998 to 1999*
EXPORTS								
EU/EFTA	Germany	4,919	2,992	4,032	4,871	3,987	1	-18.1
	France	2,475	2,227	2,282	2,857	2,894	147	1.3
	Sweden	1,725	1,621	1,393	1,420	1,333	-98	-6.1
	Switzerland	1,016	979	1,147	1,006	1,218	43	21.1
Total		15,098	11,635	13,629	15,146	15,072	346	-0.5
Other	Estonia	2,637	1,898	2,915	3,792	3,759	414	-0.9
Europe	Czech Republic	2,161	2,687	2,657	2,497	2,626	74	5.2
	Latvia	2,429	1,467	2,124	2,760	2,953	234	7.0
	Lithuania	1,769	952	765	792	938	-182	18.4
Total		11,260	8,903	11,068	13,194	14,537	1,085	10.2
CIS	Russian Federation	18,374	15,915	17,845	19,972	27,350	2,201	36.9
	Belarus	175	670	711	812	1,323	244	62.9
	Ukraine	1	307	465	465	778	171	67.3
Total		18,550	16,892	19,021	21,250	29,451	2,616	38.6
North	United States	12,817	11,937	10,864	12,290	12,433	-42	1.2
America	Canada	1,187	955	701	2,029	2,917	453	43.8
Total		14,004	12,892	11,565	14,319	15,350	412	7.2
Grand Total		58,912	50,322	55,283	63,909	74,411	4,459	16.4
IMPORTS								
EU/EFTA	Finland	9,389	6,613	6,775	9,347	10,301	456	10.2
	Sweden	7,667	5,066	7,745	9,301	10,482	987	12.7
	Austria	4,618	4,747	5,433	5,237	7,154	556	36.6
	Italy	5,058	5,156	4,742	5,456	5,197	58	-4.7
Total		43,904	34,700	40,183	46,892	51,054	2,649	8.9
Other	Turkey	782	1,249	1,049	1,346	1,510	155	12.2
Europe	Czech Republic	335	218	505	784	817	153	4.2
	Poland	485	349	268	372	560	17	50.6
	Slovenia	324	258	333	294	490	37	66.6
Total		2,701	2,870	3,526	4,208	4,943	582	17.5
CIS	Russian Federation	975	481	335	228	152	-190	-33.3
	Ukraine	471	315	160	160	57	-98	-64.6
	Republic of Moldova	31	31	31	31	31	0	0.0
Total		1,476	827	526	419	239	-288	-42.9
North	Canada	6,563	6,156	6,753	7,012	6,990	171	-0.3
America	United States	977	752	810	4,973	7,054	1,638	41.8
Total		7,540	6,908	7,563	11,985	14,044	1,808	17.2
Grand Total		55,621	45,305	51,798	63,504	70,280	4,752	10.7

Source: ECE/FAO TIMBER database, 2000.

In North America the situation is characterised by slightly increasing roundwood exports and rapidly growing imports with a growth rate of 17.2% between 1998 and 1999. At 15.4 million m³, exports are now only slightly higher than imports. Roundwood exports are mainly (69%) going to outside of the ECE region or staying in the region as intra-trade (28%). 55% of North American industrial roundwood imports are coming from inside the region and 37% from other developed countries outside the ECE region.

7.1.3 Apparent Consumption

Following trends of roundwood production and trade of ECE region, the development of apparent consumption increased by 2.5% between 1998 and 1999 and reached a volume of 1.2 billion m³.

There is stable development for the EU/EFTA and North America (graph 7.1.2). In contrast, consumption in the CIS region fell from 1995 to 1998 to 74% of the 1995 level and increased rapidly in 1999 up to a level of 80% of 1995 roundwood consumption. The reason is mainly the continued weak domestic demand. Obviously, little income from roundwood exports is brought back into the development of domestic production capacities.

GRAPH 7.1.2
Development of apparent roundwood consumption in the ECE area by regions, 1995-1999

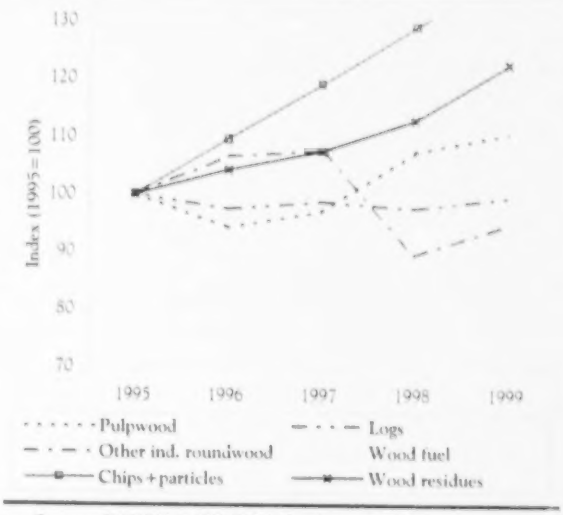
Source: ECE/FAO TIMBER database, 2000.

The picture is more optimistic in the "Other Europe" region, where increasing production, exports and imports led also to increasing consumption. Between 1998 and 1999, roundwood consumption increased by 7.1%, which is slightly less than the growth rate in the CIS, where the consumption growth rate amounted to 7.9%.

The structure of roundwood products in ECE region is changing. Production of pulpwood (round and split) is increasing rapidly, with an average growth rate of about 11.2 million m³ per year from 1995-1999 (graph 7.1.3). Between 1998 and 1999 the growth of pulpwood production was about 3.0%. At the same time, wood fuel, other industrial roundwood and also log production is slightly decreasing. The "production" of wood residues has grown faster than that of any other type of wood raw material since 1995.

The picture varies between the ECE sub-regions, which will be described in the following sections.

GRAPH 7.1.3
Development of roundwood production in the ECE area by product groups, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

7.2 Developments in EU/EFTA

Nearly 270 million m³ of roundwood was produced in EU/EFTA countries in 1999, a moderate growth in roundwood production and consumption in comparison to the development in "Other Europe" and the CIS. During 1995 and 1996 production decreased by 18.3 million m³. Between 1998 and 1999 it increased negligibly, only by 1%, whereas the production of logs decreased by 1.4% or by 2.0 million m³.

In 1999, removals in Sweden and Germany decreased, while the supply in Finland and France maintained a positive trend. Sweden and Finland were still the biggest producers, with 58.7 and 53.9 million m³ of roundwood removals respectively.

EU/EFTA region, with 51 million m³, is the biggest importer and at the same time with 36 million m³ the only net importer of ECE region. While imports grew

between 1998 and 1999 by 8.9%, exports decreased by 1.2% and amounted to 16 million m^3 roundwood in 1999. The EU/EFTA region has consolidated its position as an importing roundwood region. The most important importers of industrial roundwood are Finland and Sweden, importing in 1999 about 10.3 and 10.5 million m^3 respectively. Most of these volumes were imported from Russia and the Baltic region. In Austria roundwood imports increased by 36.6% between 1998 and 1999 and reached 7.1 million m^3. Imports here are mainly coming from the Czech Republic and Germany.

The exports are mainly intra-trade (92%), excluding roughly 0.6 million m^3 industrial roundwood, which in 1998 went from Germany to Czech Republic.

Expanding exports from "Other Europe" and the CIS countries, mainly going to western Europe, are changing traditional trade flows. For example, Germany decreased the total roundwood net exports from 2.7 million m^3 in 1995 to 0.59 million m^3 in 1999, while at the same time nearly quadrupled net imports from the CIS (table 7.2.1).

TABLE 7.2.1
German roundwood net trade, 1995-1999
(1,000 m^3)

	1995	1996	1997	1998	1999
EU/EFTA	2925.7	1700.6	2130.6	2073.7	1319.5
Other Europe	-282.4	-336.3	-245.1	-101.3	-213.8
CIS	-13.5	-39.1	-63.3	-135.8	-523.2
Non-ECE	39.2	43.5	40.7	13.7	11.8
Total	2669.0	1368.8	1862.9	1850.3	594.3

Source: ZMP, 2000.

The EU/EFTA region imports also about 12.9 million m^3 wood residues, chips and particles and exports 11.3 million m^3, which means that in these products, and unlike other ECE regions, the EU/EFTA region is also a net importer (table 7.2.2). Germany increased exports through 1998, while at the same time Belgium & Luxembourg increased their imports, possibly from Germany.

In view of the above noted trends of slightly decreasing production and increasing imports, consumption increased by 2.4% and reached 304 million m^3 in 1999. After a drop of more than 20 million m^3 in 1996 consumption in EU/EFTA region is now nearly on the same level as in 1995.

7.3 Developments in "Other Europe"

Roundwood production in "Other Europe" countries increased quickly during the last five years with an average growth rate of about 4 million m^3 roundwood per year. Between 1998 and 1999 removals increased by 7.6 million m^3, which corresponds to a growth rate of 7.1%. The major source of this current growth is coming from Latvia, Estonia as well as Romania. Since 1996 Poland is the largest supplier in this region with about 24.3 million m^3 in 1999, behind Turkey and the Czech Republic.

Log production in "Other Europe" region is increasing rapidly, especially in Latvia, where the growth between 1998 and 1999 amounted to 2.3 million m^3 logs.

With 12.5 million m^3 of roundwood in 1999, this region is the second net exporter after the CIS. The development of harvesting is the reason for the rapid increase in exports of 9.5% between 1998 and 1999, leading to a volume of 16.8 million m^3 in 1999. In 1998 significant volumes of industrial roundwood went from Estonia (2.9 million m^3) and Latvia (2.5 million m^3) to Finland and Sweden and from the Czech Republic to Austria (1.7 million m^3).

Imports by countries of the "Other Europe" region also increased rapidly by 17.5%, but the volume, in comparison to the EU/EFTA region, was still minor. Large volumes of industrial roundwood were coming from Russia to Turkey (0.6 million m^3 in 1998).

Exports of wood residues, chips and particles also increased rapidly by 12.3 % between 1998 and 1999, reaching 2.3 million m^3. After North America, the "Other Europe" region is now becoming the second most important net exporter of these products, with about 2.0 million m^3. Exports increased mainly in Estonia (by 200,000 m^3 per year during 1995 and 1999).

Taking the above into consideration, since 1998 the "Other Europe" region became the third most important roundwood consumer in ECE region, overtaking the CIS. The consumption growth rate between 1998 and 1999 corresponds to 7.1%.

7.4 Developments in the CIS

In comparison to the "Other Europe" region, most of the CIS countries are only in the beginning of a stabilisation of their policy framework, so the development of roundwood markets is characterised by high volatility. The data for the CIS region is dominated by those for the Russian Federation, by far the biggest producer and consumer in the region.

Roundwood production in the region as a whole was decreasing through 1998 but then turned around and increased in 1999 by 13.8%, and in Russia by 16.8%, reaching 125 million m^3 in the CIS. Nearly half of this volume increase was logs, with production in 1999 of 4.5 million m^3. Pulpwood production is increasing extremely fast (27% between 1998 and 1999), last year reaching 39.4 million m^3.

TABLE 7.2.2

Exports and imports of wood residues, chips and particles, 1995-1999

(1,000 m³)

Region	*Country*	*1995*	*1996*	*1997*	*1998*	*1999*	*Average growth rate*	*% Change 1998 to 1999*
EXPORTS								
EU/EFTA	Germany	1,878	2,987	3,522	7,677	6,250	1,343.4	-18.6
	France	1,160	1,211	1,156	1,318	1,491	76.9	13.2
	Austria	2,120	1,707	557	699	842	-356.5	20.5
	Belgium & Luxembourg	635	465	407	407	872	41.7	114.4
Total		7,127	8,072	7,429	12,013	11,344	1,237.4	-5.6
Other	Estonia	178	748	747	888	1,026	183.7	15.6
Europe	Czech Republic	492	552	479	339	497	-20.3	46.6
	Latvia	135	198	235	334	514	89.4	53.9
	Slovakia	10	157	185	181	151	30.6	-16.4
Total		1,054	1,865	1,824	1,907	2,346	262.7	23.0
CIS	Russian Federation	533	644	701	529	600	1.9	13.4
North	United States	5,552	7,237	6,212	6,064	6,296	31.5	3.8
America	Canada	1,488	1,717	1,707	1,498	1,391	-41.3	-7.1
Total		7,040	8,954	7,919	7,562	7,687	-9.8	1.7
IMPORTS								
EU/EFTA	Belgium & Luxembourg	1,196	1,117	1,866	1,866	2,169	269.5	16.3
	Austria	2,470	2,583	839	734	921	-494.9	25.5
	Italy	1,235	1,155	1,499	1,703	1,757	159.2	3.2
	France	1,552	1,114	1,278	1,294	1,015	-89.3	-21.6
	Germany	453	720	873	2,041	1,913	424.1	-6.3
Total		10,051	10,493	10,950	12,679	12,884	785.0	1.6
Other	Estonia	2	70	108	524	522	149.3	-0.4
Europe	Hungary	121	199	450	34	49	-31.0	44.7
	Slovenia	58	49	69	84	119	15.8	42.1
	Czech Republic	8	23	54	65	73	17.2	12.3
Total		217	398	708	736	835	157.2	13.4
CIS	Ukraine	1	1	3	3	4	0.6	45.3
North	Canada	1,344	933	1,611	1,816	2,223	264.2	22.4
America	United States	1,227	1,583	1,464	707	518	-229.4	-26.7
Total		2,571	2,516	3,075	2,523	2,741	34.8	8.6

Source: ECE/FAO Timber database, 2000.

The current data may be underestimated because of unrecorded removals (e.g. from illegal fellings). The volumes for such cuttings is estimated by various publications in the range of 2 to 20 million m^3 roundwood, which would correspond to roughly 1- 15% of the reported removals. In spite of increases in roundwood production in Russia, the potential levels are not fully realised. According to the Ministry of Economics, the country could cut up to 500 million m^3 a year, without any adverse effect on forest yield or the environment (World Wide Wood, 2000).

The CIS roundwood exports are increasing rapidly, reaching 30.3 million m^3 in 1999. Between 1998 and 1999 exports grew extremely fast, by 36% or by roughly 8 million m^3. In addition to Russia, Belarus and Ukraine were responsible for this increase, where the growth rate amounts to 62%. Also the export of wood residues, chips and particles grew at a high rate of 13.4% between 1998 and 1999.

In 1998 more than the half of the exports of industrial roundwood from the Russian Federation were going to EU/EFTA region: about 7.6 million m^3 to Finland and 2.0 million m^3 to Sweden. 6.7 million m^3 of industrial roundwood were exported outside the ECE region, mainly to Japan and China. China's share of Russian roundwood exports rose yet again in the third quarter of 1999, rising by a massive 230%. The areas closest to export markets, e.g. north-western parts of Russia, have more opportunities to maintain export markets.

In some countries, such as Belarus for example, wood exports are necessary to pay for grain imports (World Wide Wood, 2000). Roundwood imports decreased at the same time and are now only a minor 0.2 million m^3.

Consumption of roundwood was decreasing sharply during the last five years by 6.6 million m^3 per year, especially in 1998, caused mainly by the mid-1998 economic crises. Only in 1999 consumption did grow by 7 million m^3 or 7.9 %. The same picture is ascertainable in nearly all countries of this region. One of the main needs is to return revenues from exports of resources both to the general public budget and to the renovation of obsolete technical equipment in the forest sector.

GRAPH 7.4.1

United States hardwood log prices, 1994-1999

Note: Prices paid for red oak and hard maple, grade 1 logs, delivered to sawmills, Doyle log scale.

Source: Ohio Timber Prices, Ohio Division of Forestry, 2000.

7.5 Developments in North America

As in the EU/EFTA region, the wood raw material markets in North America are relatively stable. In 1999 in this region 680 million m^3 roundwood were produced, of which nearly 400 million m^3 were logs and 200 million m^3 were pulpwood. Roughly 500 million m^3 of total removals are supplied by the United States.

As reported last year in the *Review*, the forest management in US National Forests in the Pacific Northwest is changing to support non-wood benefits, which leads to a decrease of roundwood supply from these forests. During the first half of 2000 the Forest Service timber sales totalled 2.1 million m^3, down by 11.6% from 2.4 million m^3 during the same period a year earlier and in comparison with 1995. In total, from all forestlands, harvests are still on the same level as in 1995. However roundwood demand has shifted to private forests for supply, mainly in the south-eastern region of the country This could be a reason for the current increase in US sawlog prices (graph 7.4.1).

The statistics show that pulpwood production in United States was increasing, especially through 1998 by an average annual growth rate of 5.9 million m^3, whereas the production of fuel wood there decreased by 4.9 million m^3 a year.

Logs exports to Japan decreased significantly from 7.3 million m^3 in 1995 to 4.8 million m^3 in 1999 (Japan Wood-Products Information and Research Center, 2000). Despite this fact, roundwood exports are still increasing slightly, by 7% for the region as a whole. Because of rapidly increasing imports of roundwood in the United States, mainly coming from Canada, but also from outside the ECE region, the position of North America as a roundwood net exporter is decreasing. In 1999 net trade amounted to only 1.4 million m^3 roundwood exports. Despite this fact, roundwood exports are still significant with about 5.4 million m^3 in 1999. The main destination of these exports is Japan with 4.4 million m^3 industrial roundwood in 1998 and Canada with 3.5 million m^3.

Therefore, apparent consumption increased slightly, by 1.8 million m^3, during 1995 to 1999 and by 1.1% between 1998 and 1999. In light of the use of trend estimations for roundwood production of Canada, consumption developments are not reliable enough to discuss them in more detail here.

More than the half of North American industrial roundwood imports and 28% of the exports are intra-trade between the US and Canada.

The United States is a net exporter of wood residues, chips and particles, with about 5.8 million m^3 in 1999. The imports of wood residues, chips and particles decreased in the United States, while the exports of these products are still on a high level of more than 6 million m^3.

Chapter 8
Sawn Softwood – Consumption, Supply and Trade

Highlights

- Consumption, production and trade of sawn softwood rose to record levels in North America and Europe in 1999 and were even stronger in early 2000.
- Consumption of sawn softwood in the ECE region grew 4% in 1999, with growth of 6% in North America, 3% in Europe and a decrease of 18% in Russia.
- Strong economies in North America and Europe are driving demand for sawnwood for construction and other uses.
- Prices moved in opposite directions in 2000, falling to near-term lows in North America and firming in Europe.
- The United States increased imports by over 1 million m^3, with much of the new increase coming from Europe, as well as new sources from South America and Russia.
- Germany became the largest sawnwood producer in Europe and continues to be the greatest consumer by far.
- Central and eastern European countries are rapidly increasing domestic consumption, albeit from low levels, and are succeeding in finding new export markets in western Europe, United States and Asia.
- Russian Federation exports increased dramatically in 1999, although production fell.
- The ongoing recovery from the 1998 Asian economic crisis allowed ECE region exporters' markets in Japan to rebound.

8.1 Introduction

At the end of the millennium in 1999, sawn softwood demand benefited from strong economic conditions and related high levels of construction and other uses of sawnwood in North America and Europe. In contrast, the 1998 economic crisis in the CIS was still reflected in the 1999 statistics. The important, common export market for the ECE region exporters, Japan, partly recovered from the 1997/1998 Asian economic crisis and replenished stocks of sawnwood, although not to pre-crisis levels.

And at the beginning of the new millennium in 2000, record levels of sawn softwood production and trade were occurring in North America and Europe

This chapter will look at the sawn softwood markets, first on a region-wide basis, and then broken down by North America, Europe and the CIS. Each section is based on the ECE/FAO TIMBER database and then is completed with additional information obtained from official sources and trade journals.

The statistics for 1998 and 1999 for some countries differ from previous years because of important changes in the definition "coniferous sawnwood" (equivalent to sawn softwood). It includes both "planed" and "rough" sawnwood. Finger-jointed wood and continuously shaped mouldings, which were included in the prior definition, have been excluded. As a result this chapter focuses on the changes from 1998 to 1999 and updates the market developments for 2000 where unofficial information is available.

8.2 ECE region market developments

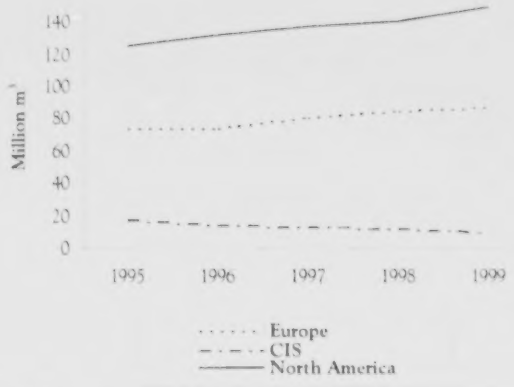
Apparent consumption of sawn softwood rose strongly to a region-wide record level in the ECE region in 1999, by 4.1% over 1998. However the improvement was not universal as consumption in the CIS fell heavily as evidenced by an 18% drop in the Russian Federation[1]. Consumption tables with individual country volumes for the last few years may be found in the annex.

Nevertheless, with strong North American, European and Asian demand for sawnwood, ECE region exports rose by 4.8%. Trading was active, both between countries in the region and with countries outside the region. More countries outside the ECE region are becoming sources of supply, including for temperate species, for example from plantation radiata pine from Chile, New Zealand and other countries. Sawn softwood is also flowing into the ECE region from tropical sources such as Brazil.

At the sub-region level, Europe and North America continued extremely strong trends in 1999 with record levels of consumption, production and trade (graph 8.2.1) (table 8.2.1).

GRAPH 8.2.1

Consumption of sawn softwood, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

The Timber Committee forecasts, from its September 1999 session, predicted continued growth in consumption in 2000, by 1.8% for Europe and by 0.4% for North America. The Committee had foreseen the fall in 1999 consumption in the Russian Federation, although not quite to the real depth, and predicted a rebound by 17% in 2000.

It should be noted that the forecasts in the table have been adjusted to be consistent with the actual 1999 statistics, by applying the forecast change from 1999 to 2000 to the 1999 statistics received earlier this year.

After the downturn due to the Asian economic crisis in 1997 and 1998, Japan's importance as an export market for European sawnwood rebounded and continued to expand in 2000 (graph 8.2.2). The ECE region is now supplying about 80% of Japan's sawnwood imports which were 9.7 million m^3 in 1999, down from a maximum of 12.6 million m^3 in 1997. The sawnwood breakdown after the first 5 months of 2000 is: North America, 53% market share, Europe 21%, and Russian Federation 6%. Softwoods, which are 88.2% of imports, are combined with sawn hardwood in the graph. Tropical hardwoods could be estimated from the statistics to be 14% of Japan's imports.

[1] The extent of the drop in apparent consumption would have been less if the fall reported in production had been less. There are many reasons that full volume of production might not be reported, for example, gaps in regional statistical reports or lack of full disclosure.

TABLE 8.2.1

Sawn softwood balance in the ECE region, 1995-1999

(million m³)

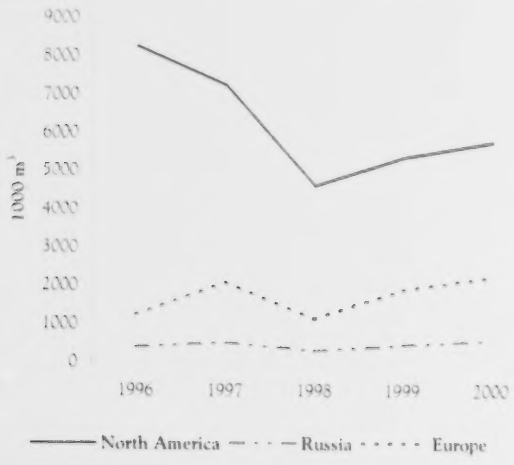
	1995	1996	1997	1998	1999	Timber Committee estimates for 2000 *
EUROPE						
Production	78.44	78.28	83.90	86.58	90.07	92.04
Imports	27.58	28.36	31.97	34.66	35.82	36.18
Exports	31.81	31.99	35.60	37.01	38.86	39.71
Net trade	4.23	3.63	3.48	2.20	2.82	3.53
Apparent consumption	74.21	74.37	80.15	84.10	86.84	88.52
RUSSIAN FEDERATION						
Production	22.53	17.53	16.68	15.61	15.13	18.45
Imports	0.04	0.01	0.33	0.01	0.00	0.00
Exports	5.64	4.35	4.78	4.63	6.11	7.75
Net trade	5.59	4.34	4.45	4.63	6.10	7.75
Apparent consumption	16.93	13.19	12.22	10.98	9.03	10.70
NORTH AMERICA						
Production	135.34	141.83	145.22	145.92	155.12	154.24
Imports	41.36	43.75	43.32	44.32	45.55	46.29
Exports	52.14	53.55	51.55	50.06	51.56	50.85
Net trade	10.79	9.79	8.23	5.74	6.01	4.56
Apparent consumption	124.55	132.04	136.99	140.18	149.11	149.67

* = The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

GRAPH 8.2.2

ECE region sawnwood exports to Japan, 1996-2000



Note: Includes both sawnwood and hardwood.
Data for 2000 estimated.

Source: Japan Wood-Products Information and Research Center, July 2000.

8.3 North American market developments

The consumption of sawnwood in North America continued to rise in 1999 by approximately 9 million m³ to reach a record 149.1 million m³. Canadian apparent consumption increased dramatically by nearly 18% or by over 3 million m³ to accommodate increased demand for housing construction. It is possible that some of the Canadian "consumption" was further processed and exported as millwork, mouldings or other value-added products. A sustained high level of residential (1.6 million homes in 1999 and a possibly a similar level in 2000) and non-residential construction in the United States in 1999 drove up demand by 5.8 million m³. Most of the United States consumption increase came from increased domestic production, which rose by 5.0 million m³ to reach a record 86.9 million m³ (table 8.3.1).

The supply of sawn softwood continues to shift in North America from west to east. For example Quebec's production has doubled in the last decade and capacity at 19.5 million m³ now exceeds all other provinces and states, with the exception of British Columbia whose capacity has fallen by 7% over the last 5 years to

32.9 million m^3 in 1999 (*International Woodfiber Report*, 1999). United States western sawmills continue to decline in numbers and production, although they have succeeded in finding new raw materials supplies, not only from non-federal lands, but also from the decreased log exports and the reduced demand for peeler logs as plywood production drops.

Demand for sawn softwood is not only for construction, but considerable volumes go into higher value uses like furniture, mouldings, glulam and other value-added products. Even greater volumes go into low value uses such as pallets, crating and packaging.

Home construction in North America is nearly 95% wood-frame, in contrast to concrete, brick or other non-wood materials in Europe. Houses are considerably larger too and a typical new 2-story house would average 240 m^2, necessitating approximately 35 m^3 of sawnwood and 100 m^3 of panels (primarily OSB and plywood) (National Association of Home Builders, 2000). Many new homes are built with some engineered wood products such as glulam beams and I-beams in ceiling and floor assembles.

Included in the construction classification is sawnwood used for building decks. Approximately 25% of all new homes have a wooden deck on the outside, equivalent to the European cement or brick terrace. In addition, decks are one of the most common remodelling

TABLE 8.3.1

Production of sawn softwood, 1996-1999

(1,000 m^3)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
EUROPE	78,277	83,902	86,576	90,073	3,497	4.0
of which :						
Main exporting countries	59,939	65,415	67,053	69,659	2,606	3.9
Germany	13,123	13,682	13,807	14,770	963	7.0
Sweden	14,170	15,419	14,874	14,608	-266	-1.8
Finland	9,300	10,600	11,300	11,700	400	3.5
Austria	7,950	8,254	8,534	9,558	1,024	12.0
France	6,506	6,800	7,197	7,450	253	3.5
Poland	4,280	5,010	5,441	5,275	-166	-3.1
Czech Republic	3,100	3,100	3,100	3,251	151	4.9
Latvia	1,510	2,550	2,800	3,047	247	8.8
Other countries	18,338	18,487	19,524	20,414	890	4.6
of which :						
Norway	2,400	2,500	2,525	2,551	26	1.0
United Kingdom	2,140	2,214	2,253	2,387	134	5.9
Turkey	2,308	2,032	2,101	2,322	221	10.5
Romania	924	1,115	1,456	1,845	389	26.7
Switzerland	1,240	1,100	1,200	1,300	100	8.3
Russian Federation	17,530	16,675	15,610	15,130	-480	-3.1
Canada	61,828	63,764	64,082	68,235	4,153	6.5
United States	80,004	81,453	81,838	86,888	5,050	6.2
NORTH AMERICA	141,832	145,217	145,920	155,123	9,203	6.3

Source: ECE/FAO TIMBER database, 2000.

projects, both for the pleasure of the owners and to enhance the value of the house for future resale. In 1997 the value of the wood in decks in the United States was $3 billion, or approximately 3.5 million m^3 (*Qualified Remodeler* as reported by the *Forest Products Journal*).

In addition to new home construction, the millions of existing houses are aging and require maintenance and rehabilitation. Many homeowners prefer to remodel their present home rather than purchase a new one. Thus the repair and remodelling market, often supplied through large DIY stores, is a key element of demand for sawnwood (including hardwoods), as well as other wood products such as flooring, mouldings and millwork. In 1999, 37.2 million m^3 went into repair and remodelling while 44.7 million m^3 fed the residential construction demand. The remainder, approximately 37.4 million m^3 was used in non-residential construction and materials handling, i.e. shipping containers and pallets.

Despite the dependence of wood for construction, substitution is occurring in the United States. Wood wall framing with solid sawnwood fell from a 93% market share in 1995 to 83% in 1998. Floor framing dropped from 59% to 42% and roof framing by a lesser degree during the same period (due to substitution by engineered wood products, specifically wooden I-beams) (*Cintrafor News*, 2000).

Overall in North America, sawn softwood prices rose by 15.2% in 1999, partly because of an early depletion of stocks (*Random Lengths* and *World Wood Review*, 2000). In 1999 at the time of publishing the last *Review*, the prices of North American sawnwood were at near record highs. But since mid-1999 the trend has been down. Last summer softwood lumber prices in North America were at an average of $480/thousand board feet, only $10 below their record 1994 price. Since then the price has fallen 39% to a level of $295 at the end of July, 2000 (based on preliminary information from *Random Lengths*) (graph 8.3.1).

The last time the price of lumber was this low was in 1995, just before negotiations between Canada and the United States which resulted in the Softwood Lumber Agreement of 1996 (discussed below). While it is beyond the Review to forecast prices, it is evident that price cycles in North America are becoming shorter. Some large sawnwood and panel manufacturers announced lower-than-expected second-quarter earnings due to low product prices (*Wall Street Journal Europe*, June, 2000).

United States *imports*, of which 95% by volume come from Canada, rose to almost 45 million m^3 (table 8.3.2). The share of Canadian imports fell from 97% in 1998, apparently as sawnwood was imported from other sources graph 8.3.2). Non-Canadian imported sawnwood was not less costly based on unit values ($159 per m^3 from Canada in 1999 versus $191 to 335 from South and Central America, $214 to 283 from Europe, $224 from Russia and $306 from New Zealand as calculated from USDA Foreign Agricultural Service statistics on import volumes and values). The long-established, cross border trade shows a close importer-exporter relationship. In 1999 Canada produced a record 68.2 million m^3 of sawn softwood, of which a record volume, 42.5 million m^3, flowed south into the United States.

This trade between the two North American countries is partly influenced by the exchange rate

GRAPH 8.3.1

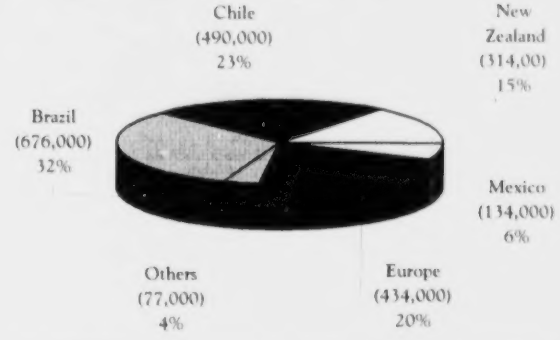
North American sawn softwood prices, 1994-2000

Note: Prices are for a mix of qualities, species and sizes.
Source: *Random Lengths Yardstick*, 2000.

GRAPH 8.3.2

United States sawn softwood import sources (without Canada), 1999

(m^3)



Source: USDA Foreign Agricultural Service, 2000.

TABLE 8.3.2

Exports and imports of sawn softwood, 1996-1999

(1,000 m³)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
EXPORTS						
EUROPE	31,992	35,603	37,013	38,859	1,846	5.0
of which :						
Sweden	10,960	10,902	10,975	11,040	64	0.6
Finland	7,016	7,509	8,204	8,269	65	0.8
Austria	4,000	4,838	4,752	5,626	874	18.4
Latvia	1,286	2,060	2,250	2,447	197	8.8
Germany	1,604	1,895	2,223	1,968	-255	-11.5
Romania	556	917	1,210	1,494	284	23.5
Czech Republic	1,384	1,397	1,231	1,480	249	20.2
Poland	592	831	709	760	51	7.2
Norway	775	700	691	755	64	9.3
Belgium-Luxembourg	257	275	400	533	133	33.3
France	328	469	511	525	13	2.6
Portugal	440	400	416	325	-91	-21.9
Other countries	2,794	3,410	3,441	3,637	196	5.7
Russian Federation	4,350	4,780	4,632	6,105	1,473	31.8
Canada	49,618	47,664	47,177	48,336	1,159	2.5
United States	3,929	3,886	2,886	3,225	339	11.7
NORTH AMERICA	53,547	51,550	50,063	51,561	1,498	3.0
IMPORTS						
EUROPE	28,358	31,968	34,661	35,816	1,155	3.3
of which :						
United Kingdom	5,344	6,491	6,490	6,604	114	1.8
Italy	4,632	5,145	5,274	5,550	276	5.2
Germany	4,466	5,280	5,301	5,319	18	0.3
Denmark	1,748	2,133	4,046	3,500	-546	-13.5
Netherlands	2,739	2,889	2,923	3,352	429	14.7
France	1,884	1,960	2,237	2,539	302	13.5
Spain	1,135	1,275	1,275	1,357	82	6.4
Belgium-Luxembourg	1,298	1,270	1,500	1,407	-93	-6.2
Austria	900	904	841	1,035	194	23.1
Norway	800	958	918	775	-143	-15.6
Other countries	3,411	3,663	3,856	4,378	522	13.5
Canada	768	804	618	742	124	20.1
United States	42,985	42,514	43,704	44,807	1,103	2.5
NORTH AMERICA	43,753	43,318	44,322	45,549	1,227	2.8

Source: ECE/FAO TIMBER database, 2000.

between the United States dollar and the Canadian dollar. Since 1997 the Canadian dollar had been losing strength relative to the United States dollar which made imports from Canada that much more attractive. However throughout 1999 the Canadian currency gained a little strength. The mid-2000 exchange rate was at C$1.45 per US$1, approximately the same as at the end of 1999.

Due to strong demand and dollar, United States sawn softwood imports rose 2.5% and accounted for 35.3% of total consumption (*Wood Statistical Roundup*, AF&PA, 2000). Sawnwood imports from overseas sources in 1999 were a record 2.0 million m^3, up 46% from 1998 (*Random Lengths Export*, 2000). The value of the imported sawnwood rose 41% to $570 million. Imports from non-Canadian sources are forecast by Random Lengths to grow slower in 2000, by 10% to reach 2.2 million m^3. Accounting for 56% on the non-Canadian imports, South America led with four of the top 10 suppliers: Brazil, Chile, Argentina and Uruguay. Most of this volume was industrial grade lumber, although the Brazilian sawnwood included boards and dimension for treating. Mexico was the only top-10 supplier to decline as domestic consumption increased and more value-added wood products were exported instead.

European presence in the United States continues to grow. Mostly 2x4 studs and dimension (fixed sizes) are imported from Austria, Sweden, Lithuania, Germany, Finland and Russia in descending order of volume in 1999 (USDA Foreign Agricultural Service, 2000).

The *Softwood Lumber Agreement* has regulated trade between Canada and the United States over the last 4 years. Established in 1996 it was designed to restrict the Canadian share of the United States sawn softwood consumption. As a result the percentage share has decreased, although higher United States consumption over the period meant that Canadian volumes rose by 7.9% or almost 3 million m^3.

It will be up for renewal in March 2001 and key players are preparing arguments for and against continuation. The agreement initially resulted in higher prices of sawnwood and higher costs, mainly for United States home buyers.

One result of the agreement has been increased exports from the 8 Canadian provinces outside of its quota, by 163%, to 6.0 million m^3 (following capacity expansions). Western United States sawmills were sheltered under the agreement and production rose by 12% to 38.9 million m^3 (*Wood Markets Monthly*, 2000). Following the agreement, exports fell to the United States from the 4 provinces under quota restrictions (Alberta, British Columbia, Ontario and Quebec).

The European and Russian market share of United States imports increased dramatically in 1999, by over 200%, although the volumes are dwarfed by Canada (graph 8.3.3). Austria leads the European invasion with over 220,000 m^3, followed by Sweden with 120,000 m^3. These countries have the possibility of producing lumber for the United States market with its particular specifications, thus qualifying for one of the North American grade stamps. In the first half of 2000, Lithuania shipped 17% of its total sawn softwood exports to North America, in part aided by a Canadian joint venture-built sawmill. The third largest European supply source for the United States in 1999 with 35,000 m^3, Lithuania looks poised to increase market share in 2000 as volumes almost doubled.

GRAPH 8.3.3

United States sawn softwood import sources from Europe, 1999

(m^3)

Source: USDA Foreign Agricultural Service, 2000.

According to Foreign Agriculture Statistics, no sawnwood was imported into the United States in 1998 from the Russian Federation. However shipments of 13,000 m^3 were recorded for 1999.

Canadian *exports* surged by 1.2 million m^3 or by 2.5% in 1999 due to strong demand from the United States and offshore markets. Shipments to Canada's most important offshore market, Japan, surged 14% in 1999, partly due to increased kiln drying capacity to meet new, more stringent Japanese standards.

The exports of sawn softwood from the United States have been seriously constrained by the strength of the dollar over most trading partners' currencies. It is too early to say whether the almost 12% increase in 1999 exports, from relatively low and falling levels, is the bottoming out of the trend. There are a number of reasons for reduced United States exports:

- Strong domestic market and increased consumption
- Increasing constraints on the former wood basket, i.e. the National Forest System
- Increasingly lower-priced competition in major export markets.

It appears that United States market share of sawn softwood in Japan is giving way to imports from Europe and elsewhere. Most regular suppliers to the Japanese market fared better then the United States as the Asian economic crisis came to an end, but United States exports to Japan fell 3% (*Random Lengths Yardstick*, 2000). Since a recent high of 145 yen per dollar in August 1998, the dollar has lost strength and was at 105 yen at the end of 1999 and was a little higher, at 109 yen per dollar, in mid 2000.

With the drop in exports to Japan, Canada became the most important export destination in 1999 (for all wood products combined). The United States shipped $1.7 billion worth of wood products to Canada in 1999 as compared to $1.6 billion to Japan. In the first 4 months of 2000 the United States exports of sawn softwood had risen another 9.6% in volume. For perspective, during the same period the United States exports of sawn hardwood to Canada, again the major export destination, rose by 22.4% in value and 11.9% in volume (367,000 m^3 of sawn hardwood versus 232,000 m^3 of sawn softwood)(USDA Foreign Agricultural Service, 2000).

In the United States sawnwood production was up almost 5% higher in the first four months of 2000 compared to the same period in 1999 (*Eastern Quotes & Comments*, July, 2000). Even higher production will be possible when some sawmills complete their capital investment improvements and the new mills being built begin production later this year. As shipments were only 3.4% ahead of the first 4-month period of 1999, stocks were being built. Combined with a slowing summer market, which is abnormal for this period of peak shipments, the result was the fall in prices mentioned above. A number of economic indicators were beginning to point to a slow down in the United States economy in mid 2000. For example mortgage rates had risen since the 30-year low in April 2000.

Canadian production continued at record rates in 2000, up 6.8% in the first quarter compared to the first quarter 1999 production (Statistics Canada, 2000). These gains were greatly aided by increased productivity. The largest increase, a rise of 11.7%, was reported in British Columbia, which produced 57.3% of the country's sawn softwood. Quebec rose less, by 4.7%, and was at 22.1% of the national production.

Canadian exports to Japan were strong and there have been some indications of renewed interest in United Kingdom markets as evidenced by some certified sawnwood being shipped in 2000.

Restructuring is occurring in the sawmilling sector in North America. In 1999 over 6.6 million m^3 of sawnwood was "traded" before reaching the marketplace due to acquisitions and mergers

Petroleum prices leapt up in North America in mid 2000 as a result of production constraints by OPEC. Shipping rates were already forecast to increase before the hike in diesel and gasoline prices, but now all transportation costs are being a closely followed. These rises may also affect imports coming into North America as well, since the oil market is global.

In summary, the strong market trends in 1999 were continuing in 2000 in North America. Despite concern about slight rises in mortgage rates, residential and other construction was at high levels and export markets, especially for Canada, were exhibiting improvements over 1999. There are continued mergers and acquisitions between North American sawnwood producers with a resulting loss of identity between Canadian and United States firms and integration into engineered wood products (more about EWP companies in Chapter 11).

8.4 European market developments

In line with the overall strength of economies, particularly the construction sector, apparent consumption in many countries in Europe rose in 1999 and overall European consumption moved up 3.2% to a record 90.1 million m^3. Consumption rose significantly in many countries, often to new highs, for example: Austria, up 7.4% to a 5.0 million m^3, France, up 6.1% to 9.5 million m^3, Germany, up 7.3% to 18.1 million m^3, Italy, up 4.5% to 6.2 million m^3, the Netherlands, up 15.5% to 3.3 million m^3 and the United Kingdom, up 2.7% to 8.9 million m^3. However the trend was not universal and consumption appeared to have fallen in Sweden, by 8.0%, part of which may be due to sawnwood stock reductions, although domestic demand was rising in early 2000.

A 7.0% increase in production of sawn softwood in Germany in 1999, to a record 14.7 million m^3, coupled with a slight decrease in production in Sweden, has resulted in Germany being the largest producer of sawnwood in Europe. Higher consumption in Germany meant that most of that increase went to the domestic market as imports were stable and exports fell 11.5%. Part of the increase came from the new, large sawmills built in the former eastern Germany. The controversy over the substantial public funds which went into building some of these mills has quieted as no more large, publicly-funded sawmills are foreseen.

The year 1999 was the second consecutive year of decreased production in Sweden, a trend not shared by other large European producers. The *Review* reported last year that bankruptcies had resulted in 600,000 m^3 of reduced capacity in 1999, equivalent to the fall in national production. Rationalization of capacity continues in the Swedish sawmilling sector as smaller and older mills are not renovated, but rather closed (*Timber and Wood Products*, July, 2000). The older mills are under competitive pressures not only from more efficient domestic mills, but also competition from other countries for the same export markets. As exports rose in both 1998 and 1999, following a drop in 1997, this confirms that sawmills' sawnwood inventories are at low levels.

In central and eastern Europe stronger consumption was seen in Estonia, Hungary, Latvia, Romania, Slovakia and Turkey, while weaker consumption occurred in the majority of countries. The exports of pallets, manufactured primarily from softwoods in Europe, has increased from central and eastern Europe with the result that some "consumed" sawnwood is later exported in the form of pallets. Corresponding directly to economic cycles, crating, pallets and containers were in high demand as manufacturing output necessitated materials handling and packaging materials.

Production also rose in Austria, by 12.0% to reach 9.6 million m^3 and like Germany, most of this went to domestic consumption as exports remained constant. Likewise Finland increased production to a record 11.7 million m^3, most of that going to the 12.5% increase in domestic consumption. Production increases did not fill all of the growth in consumption in many European countries and imports rose significantly in Austria, up 23.1% to over 1 million m^3, France, up 13.5% to 2.5 million m^3, Italy, up 5.2% to 5.6 million m^3, the Netherlands, up 14.7% to 3.4 million m^3, and the United Kingdom, up 1.8% to 6.6 million m^3.

In the United Kingdom in mid 2000 the exceptionally high demand for sawnwood for fencing was being met by domestic production and imports. Successful home improvement television programming has resulted in increased demand for home fences, as well as wooden decks (*Timber & Wood Products*, July, 2000). Decks were rare a few years ago, but due to successful promotional programmes, they have been integrated into the United Kingdom and Ireland markets. The other market for fencing is for sound barriers along motorways and railways. Millions of cubic metres of treated sawnwood have been used for walls along United States highways to reduce noise levels in urban areas and the trend is starting in Europe.

Prices of sawn softwood were generally declining since mid 1997, but showed strength in early 2000 as evidenced by Swedish export prices (graph 8.4.1). By the end of 1999 stock levels were extremely low and thus prices were rising. However in mid 2000 stocks remained low and, contrary to experience, prices were softer—perhaps only a temporary situation.

GRAPH 8.4.1

Sawn softwood prices in Sweden, 1994-2000

Source: Swedish Wood Exporters Association, 2000.

As mentioned in chapter 3, the December 1999 windstorms seem to have had minor effects on the sawnwood prices, which remained stable, partly because of strong demand in 2000. The prices in France showed a strengthening in the first 4 months of 2000 (table 8.4.1). There appeared to be no direct correlation between the change in price and the level of quality.

TABLE 8.4.1

Sawn softwood prices in France, 2000

Species	*Price range in April 2000 (French francs per m^3)*	*Change from January to April 2000*
Maritime pine	1,140 to 2,085	+1.0 to +2.3%
Scot's pine	1,035 to 1,825	-0.4 to +2.2%
Spruce & fir	1,035 to 1,825	-0.6 to +2.5%

Note: Price varies by quality. Before taxes and FOB at the sawmill.

Source: *Centre des Etudes de l'Economie du Bois*, 2000.

European sawn softwood prices in mid 2000 were being affected by currency fluctuations. The euro is currently at an all-time low versus the dollar and the pound sterling. Therefore those countries which sell in euros, both within the euro zone and from outside,

became more attractive to importers like the United Kingdom which pay in pounds (as at this time the United Kingdom is not in the euro zone). As Sweden is also not in the euro zone, but Finland is, the exports of the latter with the weaker euro have been doing well in markets like Japan and the Middle East. Likewise the United States dollar is very strong compared to European currencies with the result that wood products imports from the United States, or any wood traded in dollars, is relatively expensive.

European *imports* rose by 3.3% in 1999 to record levels. Strong gains in apparent consumption in the United Kingdom, Italy, the Netherlands, France and Austria were supported by greater imports. In an important contrast to higher imports to countries with increased consumption, German imports were almost the same as 1998, i.e., 5.3 million m^3 as increased production compensated for demand.

Europe's net trade of sawn softwood strengthened in 1999 as exports rose 5% over 1998. The large Nordic exporters had minor changes, less than 1%, however other countries such as Austria, Latvia, Romania and the Czech Republic had record exports. Considerable strength in exports in many central and eastern European countries was not universal as some countries either had production set-backs or increased domestic consumption.

A number of countries in central and eastern Europe reported important developments in production and trade of sawn softwood, sometimes on relatively small volumes. Often exports increased more than production, indicating the possibility of reduced consumption. In Romania the exports have tripled since 1996 and were reported at 1.5 million m^3, in line with production increases, but indicating an apparent consumption of 352,000 m^3. As discussed in the special chapter on China, often there is some level of wood consumption at the local level which is never recorded in the official statistics.

Following the slump in 1998 due to the Asian economic crisis, European exports to *Japan* resumed and reached 1.8 million m^3 in 1999 (Japan Ministry of Finance, as reported by *Japan Lumber Journal*, 2000). Although a slight fall in all wood imports is forecast for 2000, by 1.5% to 28.6 million m^3, the European share of sawn softwood is forecast to rise by 8.0% to reach 2.0 million m^3 (*Japan Lumber Journal*, 2000). Part of the success in European exports to Japan in 1999 and early 2000 is due to the weaker euro as compared to the yen. High-quality products have been cited as another reason (*Japan Lumber Reports*, 2000). In 1999 there were 28 European countries listed as sources of imports, of which a growing number and volume were from central and eastern Europe. In addition several CIS countries are exporting sawnwood and logs to Japan, of which Russia and Ukraine. Japan's domestic production of sawnwood, largely based on logs from Russia and North America, continues to decline in favour of imports.

The Japanese Forestry Agency revised its imports forecast in mid 2000 based on early trade reports. European sawnwood imports were forecast to be 13.5% higher than in 1999 at a level of 2.1 million m^3. In a further development, the Nordic Timber Council claims to have reversed the original 80% sawnwood share of the timber mix exported to Japan to now be 80% of further-processed products.

Production and trade in the *Baltic countries* is an annual theme of the Review because of its fast evolution and impact on western European sawnwood markets. However it is not possible to categorise these 3 countries together in terms of sawn softwood markets. Production increased in Estonia and Latvia by 10.3 and 8.8% respectively. Latvia's production is now over 3 million m^3, of which 80% is exported, despite a rise by 24% in domestic consumption. Estonia's production rose too, by 10.3%, and exports rose more, by 17.7%.

The Lithuanian situation is different – the country has less forests, and the proportion of conifers is less. Production fell in Lithuania in 1999, by 5.6%, and was considerably below the 1996 peak of 1.4 million m3, however exports increased by 3.3% for sawn softwood, and by 10% for all softwood combined (including logs). Some of Lithuania's exports of softwood are based on upgraded sawnwood imports. The continuing decline in production from state-owned forest enterprises, falling 16% in 1999, is partly due to closing of some mills (*Information Bulletin*, Centre of Forest Economics, 2000). In the first part of 2000, Lithuania's exports had increased by 25% (softwood and hardwood combined) and the United States had replaced the United Kingdom as the second largest export destination behind Germany.

The trade links with Russia, and its 1998 economic crisis, surfaced in the Baltic countries balance sheets in 1999. Nevertheless they have proved themselves to be market-oriented and have diversified from sawnwood into higher value-added products such as dimension (cut-to-size), components, turnings, planed and moulded sawnwood, flooring and panelling, pallets, furniture, millwork and now engineered wood products, i.e. glulam (*Baltic Timber Journal*, 2000).

It is extremely interesting to note the fast development in Baltic imports from the CIS of both sawnwood and roundwood. This imported sawnwood is often reprocessed and upgraded and then exported. Roundwood is both re-exported and processed into sawnwood. Some roundwood from Belarus, which is illegal to export except to Russia because of free trade

agreements, is first imported into Russia and then re-exported into the Baltic countries.

TABLE 8.4.2

Baltic countries sawn softwood production, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	656	780	860	10.3%
Latvia	2550	2800	3047	8.8%
Lithuania	1130	900	850	-5.6%

Source: ECE/FAO TIMBER database, 2000.

TABLE 8.4.3

Baltic countries sawn softwood exports, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	597	690	812	17.7%
Latvia	2060	2250	2447	8.8%
Lithuania	871	501	517	3.3%

Source: ECE/FAO TIMBER database, 2000.

TABLE 8.4.4

Baltic countries sawn softwood imports, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	52	85	146	73.3%
Latvia	21	29	118	306.9%
Lithuania	127	189	247	31.2%

Source: ECE/FAO TIMBER database, 2000.

TABLE 8.4.5

Baltic countries sawn softwood apparent consumption, 1997-1999

	1997	*1998*	*1999*	*% Change 1998-1999*
Estonia	111	175	194	11.3%
Latvia	511	579	718	24.0%
Lithuania	386	588	580	-1.3%

Source: ECE/FAO TIMBER database, 2000.

Trade was extremely active in 1999, both between European countries and with countries outside Europe. Europe's exports to the United States have increased dramatically in 1999 as shown above. These export trends continue in 2000 as evidenced by Germany's exports of sawn softwood which increased by 51% in the first quarter of 2000 (table 8.4.6). It is also noteworthy that 2 of the 3 largest export destinations also sustained heavy storm damage in December 1999, although possibly these sales were concluded before 2000 and their shipments were recorded this year.

TABLE 8.4.6

Exports of sawn softwood from Germany, 1999-2000

	1999 1st quarter	*2000 1st quarter*	*% Change*
France	100,796	129,602	28.6
Italy	84,063	103,408	23.0
Switzerland	13,022	98,758	++
Netherlands	51,234	65,338	27.5
Belgium	23,361	43,983	88.3
Austria	29,368	24,943	-15.1
Spain	5,726	8,977	58.8
United Kingdom	3,965	8,785	120.5
United States	670	7,415	++
Luxembourg	3,188	5,334	67.3
Japan	11,063	4,669	57.8
Czech Republic	2,753	4,478	62.6
Denmark	2,751	4,336	57.6
Slovenia	4,606	3,408	-26.0
Poland	970	1,061	9.4
Others	3,072	2,790	-9.2
Total	340,628	517,283	51.9

Note: ++= increase over 200%.

Source: ZMP, 2000.

Indications in mid 2000 were that the two main exporting countries, Sweden and Finland, were well on the way to even higher volumes of exports (national association statistics as reported by *L'Echo des Bois*, July, 2000). Sweden had by the end of May 2000 sold a little more, at 5.7 million m³, than in 1999 with most of the increase going to the United Kingdom. Finland had increased sales by 5.5%, with most of the increases going to regular "customers" in the United Kingdom, Germany, France and the Netherlands, as well as Japan. In the first quarter of 2000, sawnwood production at 3.1 million m³ was 13% greater than in the same 1999 period (Finnish Forest Industries Federation, 2000). Early statistics on trade do not reflect production and at this time the direct effects of the surplus roundwood from the storms of December 1999 cannot be ascertained.

Imports of sawn softwood in France in the first quarter of 2000 surged by 25% to reach 713,000 m³ from the same 1999 period (table 8.4.7). At that rate 2000 would overtake the record level of 2.6 million m³ of 1980. The softening construction-derived demand in France is mainly met by increasing sawnwood production which is mainly supplied by the storm-felled timber during this year (*L'Echo des Bois*, June, 2000). However imports mainly from what customs classifies as "northern" sources, make up the majority of the imports.

TABLE 8.4.7

Imports of sawn softwood by France, 1999-2000

	1999 1st quarter	*2000 1st quarter*	*% change*
Finland	228,446	214,847	-6
Sweden	116,487	116,728	0
Russian Federation	42,630	71,435	68
Estonia	12,230	37,258	205
Latvia	20,025	25,199	26
"North" Europe	428,817	475,450	11
Other Europe	113,641	209,199	84
Canada	19,619	7,427	-62
United States	2,523	2,343	-7
Africa	5,807	7,971	37
Other	280	1,581	465
Total	571,097	712,836	25

Source: French Customs Service as reported by *Le Commerce International du Bois*, June, 2000.

Timber Committee forecasts from the September, 1999 session were for continued growth in Europe's 2000 production and trade. With consumption forecast to grow almost 2%, early reports confirm the prediction with production and trade active in 2000.

In summary, 1999 was certainly a record setting year in Europe, with much of the gains coming from a few countries in central and eastern Europe, as well as Germany. The year ended with a catastrophe, the December storms which directly affected the sawmilling sector in the following months. The trade in 2000 appears at mid year to be escalating towards new record levels although some weakness in prices is evident.

8.5 CIS market developments

Exports of sawn softwood from Russia were reported to have shot up by nearly 32% to 6.1 million m^3, the first important rise since 1992. Exports increased despite a reported continued decline in production, down by 3.1% to 15.1 million m^3, the lowest level recorded. If production declined and imports remained at minimal levels, then how did exports increase? The answer is in an 18% drop in apparent consumption due to the continued effects of the 1998 economic crisis. (Readers' attention is drawn to the footnote at the beginning of this chapter.)

The increase in exports occurred despite a rise to 5% in export duty in February 1999 on sawn softwood and logs. The duty doubled from 5% to 10% in December 1999 (*Japan Lumber Reports*, 1999). A positive development is the reduced requests to buyers for prepayment of Russian sawmill production before manufacturing and exporting (*L'Echo des Bois*, 2000).

In 2000 Russian exports to the United Kingdom were increasing, partly aided by a weaker rouble, especially from the Arkangelsk port where some mills are undergoing improvements (*Le Commerce International du Bois*, June, 2000 and *Timber & Wood Products*, July, 2000). In 1999 the Swedish share of the German sawnwood market was reduced while the Russian and Belarussian share increased. This situation seems to have continued in the first quarter of 2000, partly due to the Swedish krona/German mark ratio, although the effects of the December 1999 storms may be influencing the trade in the first half of 2000 (table 8.5.1).

TABLE 8.5.1

Imports of sawn softwood by Germany, 1999-2000

	1999 1st quarter	*2000 1st quarter*	*% change*
Finland	202,291	203,597	0.6
Czech Republic	110,447	128,497	16.3
Sweden	184,412	127,099	-31.1
Russia	73,880	103,935	40.7
Poland	71,233	87,904	23.4
Belarus	52,062	85,386	84.0
Lithuania	68,135	68,325	0.3
Latvia	68,808	65,588	-4.7
Austria	59,223	40,518	-31.6
Norway	43,023	37,690	-12.4
Estonia	23,445	31,581	34.7
Belgium	7,044	18,702	165.5
Ukraine	7,557	9,932	31.4
Slovakia	8,054	9,801	21.7
Canada	11,106	8,832	-20.5
Romania	4,667	8 379	79.5
United States	9,427	7,495	-21.1
Netherlands	2,888	5,064	75.3
Other	8,703	12,143	39.5
Total	1016,435	1060,405	4.3

Source: ZMP, 2000.

The Timber Committee forecast a strong production increase in the Russian Federation in 2000, with a 22% rise to bring it back to the 1995 level. If consumption does not increase again in Russia, the result could be higher exports than the predicted 27.1% increase to 7.8 million m^3, a volume not seen since before 1992 by the former USSR.

8.6 Conclusion

ECE region sawn softwood consumption, production and trade rose to record levels in 1999, benefiting on one hand from strong economies in North America and Europe, and on the other hand from strength following the end of economic crises in Japan and the Russian Federation. Nevertheless the picture was not universal as some countries, especially in the CIS, continued to suffer under the transition process.

The storms that ransacked Europe's forests in December, 1999 have not had appreciable effects on sawnwood markets. Demand in 2000 was strong in most parts of the ECE region and in many countries production was rising as well as trade according to early reports. The Timber Committee's forecasts for 1999 were conservative compared to actual volumes and increases in production and trade were forecast for most countries in 2000.

Chapter 9
Sawn Hardwood – Consumption, Supply and Trade

Highlights

- Consumption of sawn hardwood in the ECE region rose in 1999, by 2.2%, due to high demand for furniture and construction-related uses as well as other uses, such as packaging and pallets.
- Trade was at record levels in North America and Europe in 1999 and in early 2000 trade continued to accelerate.
- North America and Europe each produced roughly 1 million m^3 more of sawn hardwoods in 1999.
- The windstorms which felled millions of cubic metres of hardwoods at the end of 1999 in Europe resulted in higher than normal levels of production and trade in 2000.
- Following the 1998 economic crisis in Russia, the CIS continued to have weak demand and production of sawn hardwood, although exports rose slightly.

9.1 Introduction

Overall the sawn hardwood markets in the ECE region have risen with construction-related demands for high-value hardwoods, as well as the need for low-quality sawnwood for pallets, crating and other non-appearance uses. This chapter analyses the developments in sawn hardwood markets in the ECE region as a whole and then in the individual sub-regions. Sawn tropical sawnwood is analysed separately in chapter 14. A separate analysis of secondary-processed wood products in chapter 6 describes the end uses, and indirectly, the demand for sawn hardwood.

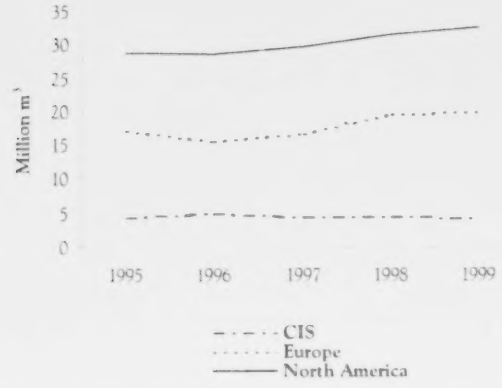
The analysis is based on the statistics received from countries in the ECE region to whom we are grateful for this critical basis for the analysis. In addition, considerable material was drawn from secondary sources, for example trade journals and websites. Lastly, personal contacts were made with country correspondents, trade associations and other experts in hardwood markets.

9.2 ECE market developments

Consumption of sawn hardwood rose by 2.2% to achieve a new record in the ECE region in 1999, with strong gains in Europe, by 3.0% and North America, by 2.7%, offsetting a 5.0% drop in the CIS (graph 9.2.1) (table 9.2.1). Trade was more active than in previous years as exports rose by 18.1% to a new height of 9.9 million m^3, of which 5.3 million was in Europe. Imports in the region rose by 7.8% to a new high of 11.4 million m^3. On much smaller volumes the CIS trade of sawn hardwoods improved for exports, rising 33.7% to reach 440,000, while imports fell by 4.5% to 107,000 m^3.

GRAPH 9.2.1

Consumption of sawn hardwood, 1995-1999



Source: ECE/FAO TIMBER database, 2000.

9.3 North American market developments

The greatest volumes of sawn hardwood in North America are used for low grade uses like pallets, crating and railroad ties. Higher value uses are mainly for furniture, with smaller shares going into mouldings and millwork, cabinets and flooring. Both high and low value uses surged in 1999 with the strong economic developments.

In the United States, where consumption rose by 2.8% to a record 31.5 million m^3, strength in all manufacturing sectors called for pallets and packaging from sawn hardwood. Production rose by 3.0%, to a third consecutive annual record of 33.9 million m^3 (table 9.3.1). Approximately 90% of the United States production is consumed domestically and in mid 2000 the domestic market was strong from both new residential construction-derived demand, as well as remodelling. Sales of flooring, cabinets, furniture, millwork and other

TABLE 9.2.1

Sawn hardwood balance in the ECE region, 1995-1999

(Million m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimates for 2000**
EUROPE						
Production	13.86	12.76	12.70	13.63	14.58	14.90
Imports	6.80	6.22	7.34	8.19	8.68	8.69
Exports	3.31	3.35	3.73	4.35	5.30	5.47
Net trade	-3.49	-2.87	-3.61	-3.84	-3.38	-3.22
Apparent consumption	17.40	15.76	16.44	17.59	18.12	18.12
RUSSIAN FEDERATION						
Production	3.98	4.38	3.93	3.97	3.85	4.76
Imports	0.01	0.01	0.05	0.03	0.01	0.00
Exports	0.27	0.25	0.25	0.25	0.33	0.44
Net trade	0.26	0.24	0.20	0.22	0.32	0.44
Apparent consumption	3.71	4.14	3.73	3.75	3.53	4.32
NORTH AMERICA						
Production	30.44	30.65	31.28	32.89	33.85	33.94
Imports	1.59	1.45	2.12	2.25	2.58	2.63
Exports	3.26	3.55	3.89	3.68	4.13	4.14
Net trade	1.67	2.11	1.77	1.43	1.55	1.51
Apparent consumption	28.76	28.55	29.51	31.46	32.30	32.43

* = The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

high-quality end products were strong in 1999 and 2000 (*Hardwood Review Export* as reported by www.hardwoodreview.com, 2000).

A growing share of the United States consumption is imported, some of which is tropical. In the last 4 years United States imports have tripled and in 1999 they rose by 15.5% to reach 2.6 million m^3 (table 9.3.2). However import volumes are roughly half of exports.

With extensive hardwood forests and increasing sawmill capacity and productivity, the United States is a net exporter of sawn hardwoods. Some of that wood is reprocessed overseas or in Mexico or Canada, and then it is re-imported as furniture, cabinetry or semi-finished goods. United States exports rose by 11.5% in 1999 to a level of 2.8 million m^3, but did not recover completely from the drop in 1998.

Primarily the higher grades of sawn hardwood are exported to Europe and a lower grade mix goes to Mexico and Asia. Lower grades contain fewer defect-free cuttings and thus require more processing time and labour costs. However lower-grade sawnwood is less costly and thus there is always a trade-off between labour and raw material costs.

The majority of the 1998 decline in exports was due to the Asian economic crisis. Evidently the partial recovery in main Asian export markets, like Japan, has not been fully reflected in a return to previous hardwood import levels from North America.

However volumes to China have been increasing and accounted for a 12% share of 1999 exports. The current trend is for lower grades and light coloured species such as tulipwood and basswood (*Hardwood Review*, 2000). Following the 1997/1998 crisis, United States exports to Japan stagnated at lower levels while those to China have more than doubled in volume (exports to Taiwan Province of China have been decreasing slowly over the last decade). In the first 5 months of 2000, exports of sawn hardwood to China grew dramatically, by 148% in value to reach $23.7 million and by 136% in volume to reach 56,000 m^3 (USDA Foreign Agricultural Service, 2000). For reference Canada was the primary export destination at $180.0 million and Italy was second at $50.7 million.

The main destination for the United States hardwoods is Canada with over a 35% share of the 1999 exports, up from 31% in 1997 (USDA Foreign Agricultural Service, 2000). The share to the European

TABLE 9.3.1

Production of sawn hardwood, 1996-1999

(Million m^3)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
EUROPE	12,760	12,704	13,633	14,584	951	7.0
of which :						
France	3,094	2,807	3,023	3,050	27	0.9
Turkey	1,766	1,801	1,889	1,935	46	2.4
Germany	1,144	1,048	1,165	1,559	394	33.8
Italy	900	963	900	900	0	0.0
Poland	780	900	1,080	1,120	40	3.7
Romania	769	746	744	973	229	30.8
Croatia	484	505	522	519	-3	-0.6
Slovakia	203	266	420	405	-15	-3.6
Czech Republic	305	293	327	333	6	1.8
Other countries	3,315	3,376	3,563	3,790	227	6.4
Russian Federation	4,383	3,925	3,970	3,850	-120	-3.0
Canada	1,000	835	1,027	1,051	24	2.3
United States	29,650	30,444	31,860	32,804	944	3.0
NORTH AMERICA	30,650	31,279	32,887	33,855	968	2.9

Source: ECE/FAO TIMBER database, 2000.

TABLE 9.3.2

Exports and imports of sawn hardwood, 1996-1999

(1,000 m³)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
EXPORTS						
EUROPE	3,346	3,726	4,352	5,302	950	21.8
of which:						
France	558	576	552	571	19	3.4
Germany	304	365	446	510	64	14.3
Romania	331	325	333	423	90	27.0
Slovakia	106	195	290	381	91	31.3
Poland	228	296	297	315	18	5.9
Hungary	150	163	250	258	8	3.1
Italy	45	103	125	237	112	89.6
Austria	160	115	110	135	25	22.7
Netherlands	142	123	137	126	-11	-7.9
Slovenia	114	103	106	109	3	2.5
Other countries	1,208	1,363	1,706	2,238	532	31.2
Canada	859	1,003	1,178	1,339	161	13.6
United States	2,692	2,890	2,502	2,790	288	11.5
NORTH AMERICA	3,551	3,893	3,680	4,129	449	12.2
IMPORTS						
EUROPE	6,217	7,339	8,187	8,682	496	6.1
of which:						
Italy	1,576	1,760	2,021	2,120	99	4.9
Germany	553	852	775	859	84	10.8
Netherlands	583	542	605	840	235	38.8
France	535	601	600	640	40	6.6
United Kingdom	575	611	479	504	25	5.1
Portugal	144	161	187	223	36	19.1
Austria	165	192	199	218	19	9.5
Sweden	109	106	123	166	43	35.3
Other countries	1,977	2,514	3,198	3,113	-85	-2.6
Russian Federation	8	46	26	9	-17	-65.4
Canada	928	1,027	954	1,083	130	13.6
United States	518	1,096	1,295	1,496	201	15.5
NORTH AMERICA	1,446	2,123	2,249	2,579	331	14.7

Source: ECE/FAO TIMBER database, 2000.

(graph 9.3.1). In 2000, despite the strong dollar compared to the euro, exports to the larger EU imports increased both in the euro zone countries (by 17% to $51 million to Italy, by 24% to Spain, by 13% to France, by 37% to the Netherlands, by 18% to Portugal and by 56% to Ireland) and to EU countries outside the euro zone (by 17% to $43 million to the United Kingdom, by 27% to Sweden and by 42% to Greece).

United States exports to Germany in the first 5 months of 2000, the sixth most important market, were down sharply by 20% in value to $27 million (USDA Foreign Agricultural Service, 2000). Perhaps part of the decline is because of the surplus, low-cost sawnwood processed from the 1999 storm-felled timber. However German sawn hardwood imports are increasingly from central and eastern European countries (*hardwoodmarkets.com*, June 2000).

Transportation costs are climbing in 2000 due to, among other reasons, higher oil prices. If United States exporters find shipping via Canada to be advantageous, there could be increased difficulty in identifying the true origin of exports from North America and further questions about the volumes, values and trade flows. More sawnwood will be transported kiln dried due to savings of weight – 3 truckloads of dried sawnwood would have the same transport cost as 2 truckloads of green sawnwood (*Hardwood Review Export*, 2000).

Canadian consumption of sawn hardwood has been falling over the last 5 years, although the drop in 1999 was insignificant, possibly indicating an end to the trend. Canadian production and consumption were 1.1 million m^3 and 0.8 million m^3 respectively. The excess is exported, along with another approximately 1 million m^3 in transhipments from the United States.

Prices of hard maple sawnwood responded to demand for furniture, cabinetry and flooring and rose strongly in the United States in 1999 (graph 9.3.2). Purchasers predominantly prefer "white" hard maple, which comes only from the sapwood. Larger diameter maples have more sapwood but are lesser in number, hence the rising prices. The 1 common grade of red oak is used in furniture, millwork, turnings, machine carvings and other uses where the longest, defect-free lengths are not needed. From a peak in 1998, the price has been generally falling, partly because new production capacity has produced more than the corresponding domestic demand.

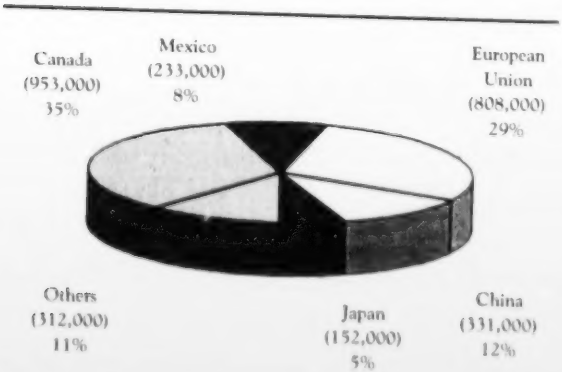
Export markets generally take the highest grades on North American hardwoods, especially in Europe where manufacturing labour costs are high for processing sawnwood into further products. In the case of white oak, one of the most highly demanded species for the European market, the price for the FAS grade, the most defect-free grade, have been generally falling, despite a small rise in early 2000.

Prices for United States cherry climbed higher in 1999 due to the continued harvest moratorium in the Allegheny National Forest, a key source for high-quality cherry logs (*Timber & Wood Products*, 2000). In spite of the fact that growth exceeds removals by 70% in the

GRAPH 9.3.1

United States sawn hardwood export destinations, 1999

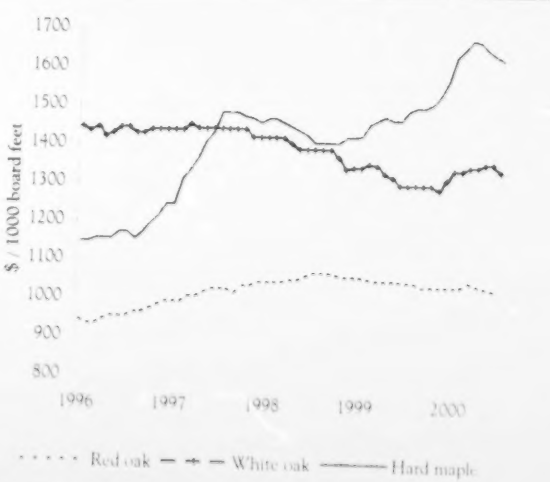
(m^3)



Source: USDA Foreign Agricultural Service, 2000.

GRAPH 9.3.2

United States sawn hardwood prices, 1996-2000



Note: All kiln-dried, 4/4 (2.5 centimetre) thick. Red oak and hard maple are 1 common grade and white oak is the highest FAS grade.

Source: *Hardwood Review*, 2000.

United States hardwood resource, some eastern National Forests are coming under pressure to reduce harvests (American Forest and Paper Association, 2000).

In 1999 the exports of several species to Europe expanded significantly, especially ash, up 47%, hard maple, up 18%, walnut, up 44%, cherry, up 3%, and tulipwood, up 6%. In contrast, red oak shipments declined by 35% (American Hardwood Export Council, 2000). The United States also exported 58% more flooring and considerable volumes of flooring manufactured in Europe employ United States species.

9.4 European market developments

In Europe the consumption of sawn hardwood rose by 3.0% in 1999 to reach 18.1 million m^3. This is in line with the trend for the last 4 years and it was forecast by the Timber Committee to continue in 2000, although at a slower rate. At 18.1 million m^3 in 1999, consumption remains well below the levels at the beginning of the 1990s, i.e. near 22 million m^3. As in North America, residential and non residential construction was driving demand for sawnwood for mouldings and millwork, as well as furniture. The barrel industry continues to consume increasing volumes of white oak for European vinicultures as well as exports to the United States, South Africa, Australia and other wine producing countries.

Production of sawnwood rose strongly, by 7.0%, with more than half of the increase coming from Germany, which showed a 33.8% production increase from 1998, to reach 1.6 million m^3. France, the largest producer of sawn hardwoods in Europe had little increase. However with the windstorms at the end of 1999, both countries could show increased production in 2000. Based on higher export volumes in the first quarter 2000, production could be assumed to have increased.

Production also increased in a number of central and eastern European countries, among which, Croatia, Estonia, Latvia, Lithuania, Poland and Romania. Most of these countries have also reported increased furniture production and exports, primarily to western Europe. It is important to note that *apparent* consumption is not always true domestic consumption, especially where sawnwood is processed into value-added products for export, such as mouldings. Production in Turkey continued to climb, by 2.4% to reach 1.9 million m^3, a volume which ranks second in Europe behind France and ahead of Germany.

Trade in 1999 was active in Europe, although the 22% increase in exports, of which over a third was from Belgium and Luxembourg, could not be confirmed.[1] Thus the exact level should be less than reported here. Nevertheless, as only a few European countries reported fewer exports in 1999, e.g. Denmark, and most exported more, it is certain that exports increased by double digits. In the *Review* "exports" are both within Europe and to destinations outside. Many European exporters have established market share in Asia where beech is still in high demand, not only for sawnwood, but also for logs and veneer.

European imports of sawnwood rose strongly too, by 6.1%, consistent with the trend of higher apparent consumption. Italy represents almost a quarter of Europe's hardwood imports (mostly temperate, but roughly 10% was tropical) and imports rose by almost 5% to a record 2.1 million m^3. Early reports in 2000 indicate that both sawnwood and logs from storm damaged timber in France, Germany and Switzerland have been flowing heavily to Italy.

In the United Kingdom, despite greater imports in 1999, stocks were reported to be low in 2000, leading to price volatility (*Tropical Timbers*, now *hardwoodmarkets.com*, 2000). United Kingdom imports climbed 25% in 1999, to reach 504,000 m^3, but not recovering from the drop in 1998. Tropical sawnwood and roundwood imports together fell by 8% in the United Kingdom in 1999 (*Tropical Timbers*, 2000). While still small, volumes of sawn sawnwood are being imported from central and eastern European countries, some of which is being transhipped from Russia and Ukraine.

In 1999 tropical sawnwood imports rose strongly, by over 10% to reach 1.6 million m^3 in Europe, mainly in the Netherlands. Tropical timber, especially plywood, but also some species of sawnwood, has been priced lower since the Asian economic crisis. While not based on conclusive evidence, some of the increased tropical imports could stem from consumers feeling better about purchasing tropical timber since certification systems have been initiated to ensure sustainable forest management. ITTO, Comtrade and Comext report a continued rise in imports of value-added tropical products. The current fashion in Europe during the summer of 2000 is lawn and garden furniture made from tropical species such as teak.

In 2000 the demand for United States hardwoods continued to be robust due to continued recovery in Asia,

[1] Belgium and Luxembourg responded to the trade questionnaire for 1999, but not for 1998. Thus there is a possibility that the old values are not consistent with the new submission, hence the large jump in European exports. In addition the definition in the questionnaire of "non-coniferous sawnwood" changed slightly, which may also be a factor in this large jump in exports.

sustained exports to China and "bullish" markets in Europe (*Timber & Wood Products*, July 2000). Demand for furniture (wood and non-wood) rose in the United Kingdom by 14.2% in volume and sales were up by 12.7% during the first quarter 2000 (United Kingdom statistics as reported by *TTJ*, July 2000). Domestic manufacturers were losing market share to imported furniture which increased by 47% in value and 58% in volume in the first quarter of 2000 compared to the first quarter 1999. United Kingdom furniture exports increased in value by 8% in early 2000 but decreased by 13% in volume. These changes in trade patterns can partly be explained by the relatively strong pound sterling.

As in North America, one of the current, strong demands in Europe for sawn hardwood, specifically in strips or friezes, is for fabrication of wood flooring. Demand for non-allergenic flooring, due to health promotions in countries like the United Kingdom, where approximately 90% of households have some carpeting, have led to the creation of the Healthy Flooring Network (*Timber & Wood Products*, July 2000). There have been capacity increases in flooring manufacturing in Europe, along with mergers and acquisitions. All of these developments have resulted in increased production of parquet (hardwood and softwood) in Europe (graph 9.4.1). Some 86% of the wood flooring production is some form of laminated wood and 14% is solid wood (*L'Echo des Bois*, July 2000). Most of the flooring is produced in the Nordic countries, Germany, France and Italy and it is consumed in Germany, Italy, Spain, France and Austria.

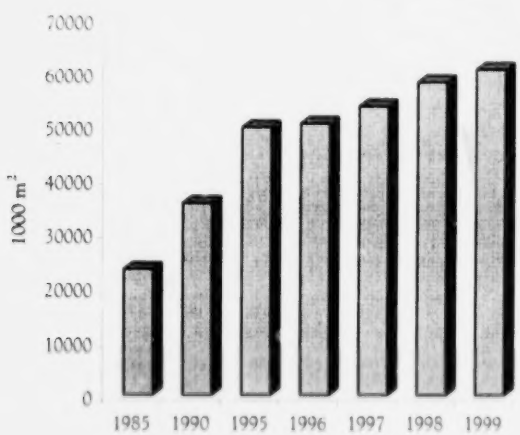
The prices of sawn hardwood in Europe show no correlation between countries when viewed on a macro level. The mix of grades included in the indices disguises the real price changes within the species. Beech sawnwood prices exhibit opposite trends in Germany and France over the past 5 years until 1999 (graph 9.4.2). However since mid 1999 the beech prices were falling in both countries and the drop accelerated in 2000.

The windstorms felled 193 million m^3 of roundwood (hardwood and softwood combined) as described in chapter 3, and the price of *sawlogs*, especially beech, fell by 30 to 40%. However there was not the same effect on sawn hardwood prices. In contrast, some sawnwood prices were rising in 2000. The only species of high-quality sawnwood showing a drop in price was beech, perhaps because of a temporary overproduction to process the sawlogs before the onset of stain (*Forêts de France* and *L'Echo des Bois*, June, 2000) (table 9.4.1).

The rise in prices for sawnwood at a potential time of oversupply due to the huge volumes of roundwood available due to the storms is due to continued strength in residential and non-residential construction in Europe. However in mid 2000 there were signs of a slowdown in residential construction as building permits and housing starts fell in France, although the non-residential construction appeared not to have weakened (*L'Echo des Bois*, June 2000).

GRAPH 9.4.1

Parquet production in Europe, 1985-1999

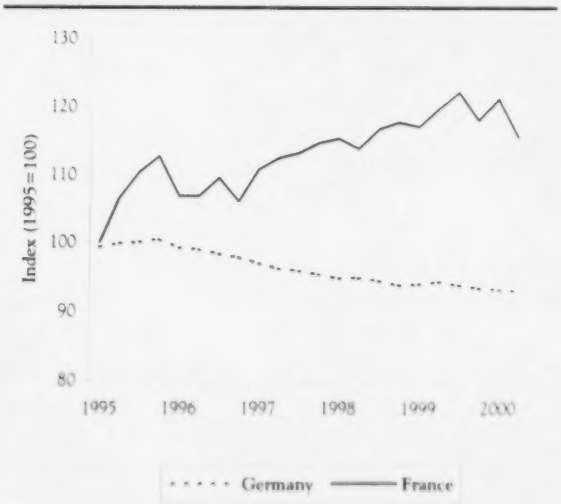


Note: Hardwood and softwood combined

Source: Fédération Européenne de l'Industrie du Parquet, 2000.

GRAPH 9.4.2

French and German beech sawnwood prices, 1995-2000



Sources: Statistisches Bundesamt; Centre d'Etudes de l'Economie du Bois, 2000.

TABLE 9.4.1

Sawn hardwood prices in France, 2000

Species	*Price range* (*French francs per m³*)	*Change* *January to April 2000*
Oak	3175-5410	-0.4 to +2.8%
Beech	1715-2380	-3.5 to -4.6%
Poplar	1665	minor

Note: Price varies by quality and size.

Sources: *Forêts de France* and *L'Echo des Bois*, June 2000.

The Timber Committee forecast a large increase in exports in 2000, by 3.2%, supported by a 2.2% rise in production in Europe. However as these forecasts were made 3 months before the catastrophic windstorms, the sawnwood production and trade could be much higher in 2000 as suggested by early trade reports.

9.5 Russian Federation market developments

As was the case for softwood, sawn hardwood consumption fell, by 5.8%, erasing the gains made in earlier years. Of the 4.2 million m^3 consumed, most is from domestic production as imports are minor. Exports from the Russian Federation are also small, but they increased by 31.7% in 1999 to reach 440,000 m^3. The Timber Committee forecast that consumption would begin to recover in 2000, as well as production, and that exports would continue rising.

9.6 Conclusion

Markets for sawn hardwood were active in 1999 with consumption, production and trade at record levels in the ECE region as a whole, but not at highest levels in all countries. Storms felled millions of hardwood trees in France, Germany and Switzerland in December 1999 with a direct impact on roundwood but not sawnwood markets, in 2000. Trade in hardwoods was stronger than forecast in Europe in mid 2000. In North America records were set in 1999 for consumption, production and trade and in mid 2000 the early reports were for even higher volumes in 2000.

Chapter 10
Wood-based Panels – Supply, Trade and Consumption [1]

Highlights

- Overall wood-based panels consumption in Europe shows a small increase in 1999 to a new record level.
- Particle board consumption in Europe in 1999 was just above 1998 levels and reached 35.2 million m^3, a new record, thanks to the recovery of markets in the second half of the year.
- OSB in Europe is gaining market share very rapidly and consumption was up 43% to just under 1 million m^3. This trend is expected to continue as new capacity comes on stream.
- Overall fibreboard consumption in Europe was 2.8% higher in 1999, and reached 10.4 million m^3; of this amount, the increase of MDF consumption was stronger, up 10.7% to 7.1 million m^3, despite very competitive markets.
- Production of plywood in Europe was up 2.3% from 1998, as output from the main producer Finland was over 1 million m^3 for the first time. However, consumption remained near 1998 levels and markets were competitive.
- Overall wood-based panels consumption in North America reached record levels in 1999 to 55.6 million m^3, a 5.3% increase.
- In the North American structural panel sector, OSB continued its strong growth and consumption increased 10.6% in 1999. Softwood plywood consumption increased marginally, up 2.9%, due to a fall in United States exports, while North American production remained at 1998 levels.
- Overall wood-based panels consumption in the Russian Federation, was up 13% to 3.0 million m^3 in 1999, but overall consumption remains well below 1992 levels.

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10.1 Overview of wood-based panels markets

Preliminary figures of wood-based panels consumption in Europe show a small increase in 1999 to 52.1 million m^3 a new record level (table 10.1.1). However, according to the European Panel Federation (EPF), real consumption taking into account particle board stock changes, was higher due to the recovery of markets in the second half of 1999. Particle board is the main panel in Europe with over 67% of total consumption. Consumption of MDF and OSB set record levels. MDF was up 10.7% to 7.14 million m^3 and OSB increased by 43% to just under 1 million m^3.

In North America trends show a continued strong performance for the wood-based panel sector in 1999 reaching 55.6 million m^3. OSB and MDF have continued their expansion. Dr. Henry Spelter from the USDA, Forest Products Laboratory has contributed to this chapter by analyzing trends for the different panel products in North America using as a frame of reference the concept of life cycle. The analysis shows that while softwood plywood has reached maturity and is at present in a declining phase, particle board is still a mature product. OSB and MDF, on the contrary, are new products with rapid market penetration and are substituting other wood products. The secretariat thanks Dr. Spelter for his contribution.

Wood-based panels consumption in the Russian Federation, has increased to 3.0 million m^3 in 1999. Higher production levels, mostly of particle board contributed to this increase, but overall consumption remains well below 1992 levels.

TABLE 10.1.1

Apparent consumption of wood-based panels (excluding veneer sheets) in Europe, the Russian Federation and North America, 1995-1999

	1995	*1996*	*1997*	*1998*	*1999*	*% of total*	
						1995	*1999*
EUROPE							
Particle board and OSB	30.54	30.11	32.08	34.70	35.16	69.4	67.4
Plywood	6.29	5.83	6.13	6.58	6.61	14.3	12.7
Fibreboard	7.16	7.23	8.25	10.15	10.43	16.3	20.0
Total	43.99	43.17	46.46	51.44	52.19	100.0	100.0
Change on previous year							
- Volume		-0.82	3.29	4.98	0.76		
- %		-1.9	7.6	10.7	1.5		
RUSSIAN FEDERATION							
Particle board	2.05	1.43	2.30	1.71	1.98	71.6	65.2
Plywood	0.20	0.29	0.35	0.40	0.41	6.9	13.6
Fibreboard	0.62	0.43	0.64	0.59	0.64	21.6	21.2
Total	2.87	2.15	3.29	2.69	3.04	100.0	100.0
Change on previous year							
- Volume		-0.72	1.14	-0.60	0.35		
- %		-25.0	53.1	-18.2	12.9		
NORTH AMERICA							
Particle board and OSB	18.66	22.04	24.01	26.50	28.49	42.0	51.2
Plywood	18.92	18.94	18.03	18.13	18.66	42.6	33.6
Fibreboard	6.81	7.09	7.05	8.16	8.46	15.3	15.2
Total	44.39	48.07	49.09	52.79	55.61	100.0	100.0
Change on previous year							
- Volume		3.68	1.03	3.70	2.82		
- %		8.3	2.1	7.5	5.3		

Source: ECE/FAO TIMBER database, 2000.

10.2 Plywood

Dr. Spelter's contribution has been integrated to the description of wood-based panels market developments based on the statistics received by countries. The life cycle concept basically states that everything has a beginning and an end, products passing through several distinct phases. The first phase is characterized by rapid growth, where a product's sales rate exceeds that of its underlying markets. That is, it is gaining market share. This is followed by a phase of maturity, where sales increasingly reflect the twists and turns of end markets as the industry is less able to insulate itself from cycles by achieving market penetration. Finally, there is a phase of decline, where sales lag the pace of downstream markets as other products begin to penetrate the market at its expense.

In North America, western Douglas fir plywood, which traces its origins to the early 1900s but whose modern expression really began in the 1930s with the development of water-resistant adhesives, exhibited the characteristics of a growth industry back in the 1950s (graph 10.2.1). During this period, the ups and downs of housing construction, its main market, were hardly noticeable in its sales chart. By the 1960s, however, when housing slumped, so did its sales, indicating its maturity. Today it is a declining product as other commodities, first southern pine plywood and now oriented strand board, have eaten away at its markets.

Southern plywood's evolution was similar, although its initial progress was much faster, which is attributable to it being an extension of an existing industry. It too has matured, about a couple of decades later than its western counterpart, and is now exhibiting signs of decline.

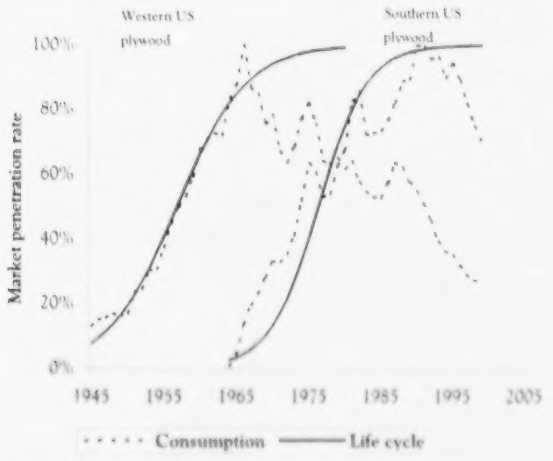
Total structural panel demand (both softwood plywood and OSB) in North America has grown at an average pace of 3% per year over the past three decades (graph 10.2.2). Underlying economic fundamentals of relatively low inflation and robust general growth support that rate of increase over the long term, although current interest rate increases portend a short term cyclical dip. Given plywood's higher costs relative to OSB, it is difficult to imagine the plywood sector claiming its share of that growth increment. Due to the forthcoming rapid increases for OSB (see below), plywood production will probably decline in the coming years. That and looming regulatory mandates to reduce factory air emissions are likely to cause older, less-efficient mills to be abandoned. Already announced closures of two mills in western United States have been attributed to these factors.

Plywood closures are likely to be less severe than the 6 million m^3 increase in new OSB capacity due to diversification into products and markets that are less vulnerable to competition from OSB. After peaking at 22.5 million cubic m^3 in 1987, plywood production in North America declined but has stabilized in recent years at 17.5 million m^3. In the next couple of years, however, around 3 million m^3 of production capacity is likely to face permanent closure due to the factors cited above.

In Europe apparent consumption of plywood declined

GRAPH 10.2.1

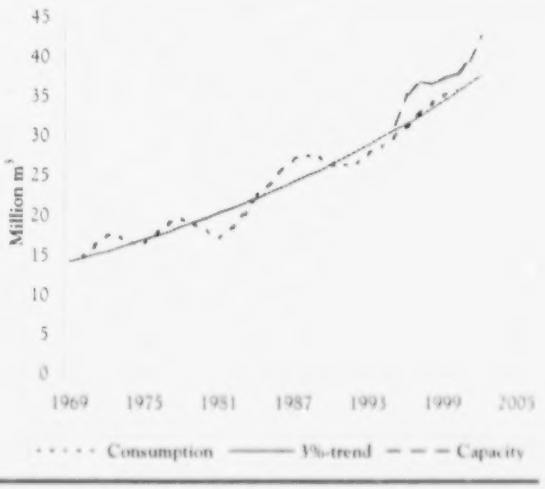
Life cycles of plywood, 1945-2000



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

GRAPH 10.2.2

North American structural panel demand and capacity, 1969-2000

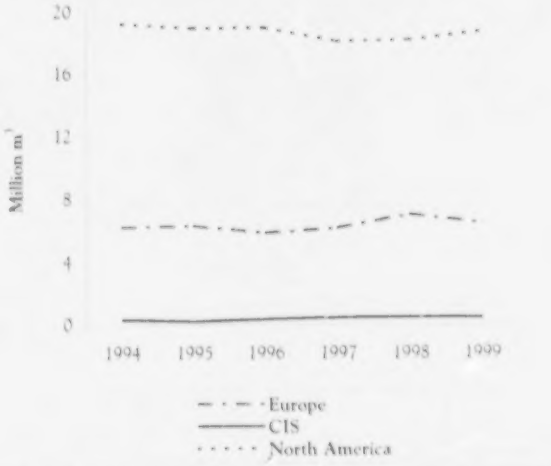


Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

slightly in 1999 due to higher export volumes outside the region (graph 10.2.3, table 10.2.1). Plywood imports to Europe incurred increased change in market share as North American plywood was substituted by cheaper Brazilian plywood. In mid 2000 the price of tropical plywood, especially from Indonesia, has fallen further. However, production increased as Finland, Europe's main producing country, set a new record level to 1.1 million m^3. The regain of activity in end use sectors towards the end of 1999 increased demand for softwood plywood and prices showed modest gains. However, according to Finland's Metsäliitto Group, European markets for birch plywood declined due to over capacity in Finland and fierce competition with exports from the Russian Federation and the Baltic countries (table 10.2.2).

GRAPH 10.2.3

Consumption of plywood, 1994-1999



Source: ECE/FAO TIMBER database, 2000.

TABLE 10.2.1

Plywood balance in Europe, the Russian Federation and North America, 1995-1999

(Million m³)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimates for 2000 **
EUROPE						
Production	3.81	3.89	3.88	4.18	4.27	4.35
Imports	4.49	4.14	4.65	5.20	5.26	5.34
Exports	1.96	2.16	2.36	2.77	3.03	3.13
Net trade	-2.53	-1.98	-2.29	-2.43	-2.23	-2.21
Apparent consumption	6.29	5.83	6.13	6.60	6.47	6.56
RUSSIAN FEDERATION						
Production	0.45	0.67	0.88	1.10	1.32	1.47
Imports	0.01	0.01	0.03	0.03	0.01	0.00
Exports	0.26	0.38	0.56	0.74	0.91	1.03
Net trade	0.25	0.38	0.53	0.71	0.91	1.02
Apparent consumption	0.20	0.29	0.35	0.40	0.41	0.45
NORTH AMERICA						
Production	18.97	18.79	17.73	17.48	17.52	17.02
Imports	1.44	1.64	1.85	2.24	2.78	2.70
Exports	1.50	1.49	1.54	1.59	1.63	1.61
Net trade	0.06	-0.15	-0.31	-0.65	-1.15	-1.10
Apparent consumption	18.92	18.94	18.03	18.13	18.66	18.12

*= The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.2.2

Production and trade of Plywood, 1996-1999

(1,000 m³)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
PRODUCTION						
EUROPE	3,890	3,883	4,175	4,271	96	2.3
Finland	824	908	992	1,076	84	8.5
France	536	539	541	543	2	0.4
Italy	402	414	420	450	30	7.1
Spain	210	210	382	382	0	0.0
Germany	512	448	428	363	-65	-15.2
Poland	190	184	178	172	-6	-3.4
Austria	150	150	150	155	5	3.3
Latvia	103	120	150	155	5	3.3
Other countries	963	911	934	974	40	4.3
RUSSIAN FEDERATION	666	884	1,102	1,320	218	19.8
Canada	1,814	1,830	1,750	1,749	-1	0.0
United States	16,975	15,897	15,732	15,767	35	0.2
NORTH AMERICA	18,789	17,727	17,482	17,516	34	0.2
EXPORTS						
EUROPE	2,165	2,357	2,767	3,031	264	9.5
Finland	617	725	832	939	107	12.9
Belgium-Luxembourg	88	101	355	371	16	4.6
France	180	201	222	243	21	9.4
Other countries	1,279	1,330	1,358	1,478	120	8.8
RUSSIAN FEDERATION	382	559	736	913	177	24.0
Canada	360	557	755	952	197	26.2
United States	1,135	984	833	682	-151	-18.1
NORTH AMERICA	1,495	1,541	1,588	1,634	46	2.9
IMPORTS						
EUROPE	4,140	4,646	5,196	5,260	64	1.2
United Kingdom	965	967	969	971	2	0.2
Netherlands	260	394	528	662	134	25.4
Belgium-Luxembourg	215	313	519	539	20	3.8
Italy	295	312	378	367	-11	-2.9
France	347	353	359	365	6	1.7
Other countries	2,059	2,307	2,443	2,356	-87	-3.6
Canada	239	256	273	291	17	6.3
United States	1,406	1,592	1,964	2,489	525	26.7
NORTH AMERICA	1,645	1,848	2,237	2,780	542	24.2

Source: ECE/FAO TIMBER database, 2000.

10.3 Oriented Strand Board

Among the various sectors of the panel industry, OSB has been the most profitable in recent years. As a consequence, it continues to attract much new investment interest. Looking over the list of projects during the next few years, there are at least 16 announced new plants or expansions slated for the Americas (table 10.3.1). All told, they represent over 6 million cubic meters of additional capacity, or about a 30% increase. OSB has grown steadily over the past three decades along a path traced out by a standard sigmoid life-cycle curve

(graph 10.3.1). Given this history, one has to ask, where along this curve might it be today?

The current trend of OSB is rooted in steadily growing markets and increasing market shares. But if the latter trend is topping out, as suggested by the flattening part of the life-cycle curve, then the added capacity may overshoot the market's ability to absorb the new supply. In the past, weakness in end markets was often offset by gains market share. Such is likely to happen again, but recent data show a fairly advanced state of OSB penetration in its major residential construction markets (table 10.3.2). In terms solely of plywood and OSB, a 1995 end-use survey showed a 61% : 39%, OSB to plywood split. In 1998, this changed to 68% : 32% split, indicating a strong gain. With each such gain in market share the potential for additional gains diminishes. Further, as noted above, plywood production data show product diversification into markets less prone to

TABLE 10.3.1

New OSB capacity announcements in North and South America, 2000-2002

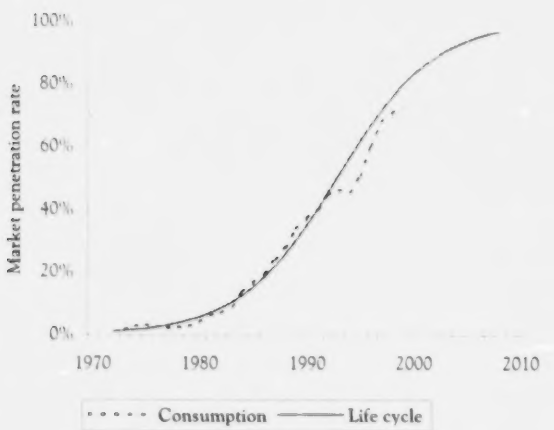
(1000 m³)

Company	*Location*	*2000*	*2001*	*2002*	*Cumulative*
Norbord	S. Carolina	440			440
Martco (expansion)	Louisiana	55			495
Potlatch (expansion)	Minnesota	165			660
Slocan (expansion)	B. Columbia	60			720
Ainsworth	B. Columbia		360		1,080
Boise Cascade	Chile		440		1,520
Georgia Pacific	Arkansas		360		1,880
Godfrey	New York		440		2,320
Trillium	Venezuela		300		2,620
Weyerhaeuser	Saskatchewan		500		3,120
Ainsworth-Grant	Alberta		530	265	3,915
Ainsworth-Norsk	Saskatchewan			440	4,355
Chateaugay	New York			400	4,755
Louisiana Pacific	B. Columbia			500	5,225
Louisiana Pacific	Quebec			530	5,785
Norbord	Alabama			440	6,225
Total		720	2,930	2,575	6,225

Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

GRAPH 10.3.1

Life cycle of OSB, 1970-2010



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

TABLE 10.3.2.

Structural panel residential market shares, 1995 and 1998

(%)

Segment	*Product*	*1995*	*1998*
Floor sheathing	Plywood	33	33
	OSB	28	36
	Slab	36	29
Underlayment	Plywood	13	11
	OSB	9	19
	Other	78	70
Wall sheathing	Plywood	17	13
	OSB	45	49
	Other	38	38
Roof sheathing	Plywood	35	27
	OSB	62	72
	Other	03	01

Source: Wood Products Promotion Council, 2000.

competition from OSB. Less than half of the plywood output in 1998 was sheathing, the grade most directly vulnerable to competition from OSB.

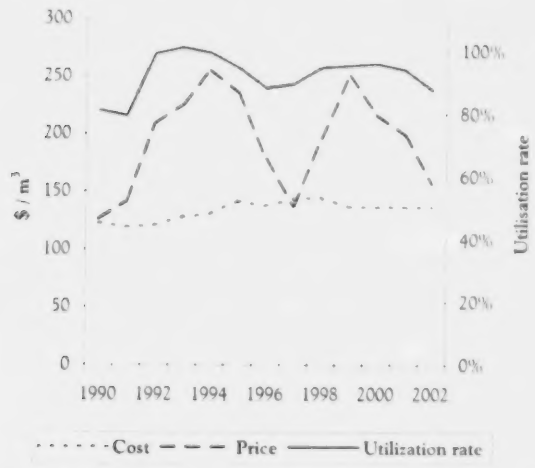
Thus, if all the planned OSB plants are realized, an extended period of weak pricing, consolidation and rationalization, involving both the plywood and the OSB sectors, is likely to follow. If the historical relationship between capacity utilization and margins is applied to the projected capacity utilization based on the plant announcements and the trend in demand, and if costs remain constant at current levels, by 2002 the price level would drop to just above $150 per m^3, as was the case in 1997 (graph 10.3.2). The volatility of structural panels and OSB prices in North America, as a result of consolidation and rationalization in the market observed in 1998 continued in 1999 and through the first half of 2000 (graphs 10.3.3 and 10.3.4).

A further notable development in OSB is the rising European interest in it. During 1999, production increased by 43% to 968,000 m^3 (tables 10.3.3 and 10.3.5) and several price increases were successfully implemented. There are at least twelve potential new projects on tap (table 10.3.4). If all are realized, over 3 million m^3 of capacity will be looking for markets by the end of 2002. But European building methods differ from North America's and wood frame construction is relatively rare. Over a decade ago, the machinery vendor Carl Schenk AG studied the European market potential for OSB and concluded that about 1 million m^3 would be the most that would be required. This year European capacity will increase to over 1.5 million m^3 and, although Europe's panel needs are rising with some increase in the popularity of frame construction and rebuilding needs, OSB expansion is mainly attributable to new applications like flooring, packaging and decoration (EPF, 2000) (graph 10.3.5).

However, it is questionable if a three-fold increase in European supply can be accommodated. If this is the case, North American and European exports of OSB may compete in international markets.

GRAPH 10.3.2

OSB prices and costs versus utilization rate, 1990-2002



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

GRAPH 10.3.3

North American structural panel composite prices, 1994-2000

Source: *Random Lengths Yardstick*, 2000.

GRAPH 10.3.4

United States OSB prices, 1995-2000

Source: *Random Lengths Yardstick*, 2000.

TABLE 10.3.3

OSB balance in Europe, the Russian Federation and North America, 1995-1999

	1995	1996	1997	1998	1999	Timber Committee estimates for 2000 *
			(Million m^3)			
EUROPE						
Production	0.37	0.37	0.44	0.66	0.97	1.15
Imports	1.02	0.79	0.99	1.08	1.17	1.19
Exports	0.58	0.53	0.55	0.63	0.73	0.73
Net trade	-0.54	-0.37	-0.57	-0.58	-0.44	-0.46
Apparent consumption	0.44	0.38	0.44	0.37	0.53	1.61
NORTH AMERICA						
Production	11.09	12.80	14.50	16.21	17.92	18.09
Imports	3.47	4.23	4.99	5.81	6.64	5.96
Exports	3.63	4.40	5.20	6.04	6.89	7.23
Net trade	0.16	0.17	0.21	0.23	0.25	1.27
Apparent consumption	10.93	12.62	14.30	15.98	17.67	16.81

* = The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.3.4

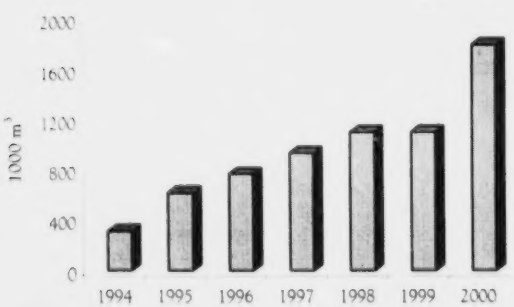
Announced OSB capacity in Europe, 2000-2002

Company	Location	2000	2001	2002	Cumulative
			(1,000 m^3)		
Egger	Wismar, Germany	360			360
Agglo	Genk, Belgium	300			660
Isotex (expansion)	France	100			760
Kronofrance	France	360			1,120
Kronotex	Wittstock, Germany		400		1,520
Kunz	Wittenberge, Germany		300		1,820
Pfleiderer	Neumarkt, Germany		300		2,120
Glunz	Nettgau, Germany		300		2,420
Ekoplyta	Poland		200		2,620
Kronospan	Wales, United Kingdom			300	2,920
Hornitex	Beeskow, Germany			400	3,320
Solo	Czech Republic			200	3,520
Total		1,120	1,500	900	3,520

Source: Andritz, Dieffenbacher, 2000.

GRAPH 10.3.5

OSB production capacity in Europe, 1994-2000



Source: European Panel Federation, 2000.

TABLE 10.3.5

Production and trade of OSB, 1996-1999

(1,000 m³)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
PRODUCTION						
EUROPE	373	438	663	968	305	46.0
Ireland	0	0	110	300	190	172.7
Poland	0	60	170	280	110	64.7
United Kingdom	223	223	223	223	0	0.0
Belgium-Luxembourg	150	150	150	150	0	0.0
Romania	0	5	10	15	5	50.0
Canada	3,542	4,908	6,274	7,640	1,366	21.8
United States	9,254	9,595	9,936	10,277	341	3.4
NORTH AMERICA	1,2796	14,503	16,210	17,917	1,707	10.5
EXPORTS						
EUROPE	532	545	632	730	98	15.5
Poland	0	50	170	290	120	70.7
Belgium-Luxembourg	113	125	138	150	12	8.9
United Kingdom	118	124	129	135	5	4.2
Slovenia	82	66	51	35	-16	-30.8
Slovakia	115	86	57	28	-29	-50.9
Sweden	0	0	5	16	11	204.0
Other countries	104	94	82	76	-6	-7.6
Canada	4,402	5,177	5,952	6,728	775	13.0
United States	0	19	89	159	70	78.7
NORTH AMERICA	4,402	5,196	6,041	6,887	845	14.0
IMPORTS						
EUROPE	792	994	1,075	1,169	94	8.7
Greece	297	306	316	325	9	3.0
Germany	16	108	200	292	92	46.0
Netherlands	67	82	98	113	15	15.8
Slovakia	0	17	43	69	26	60.1
United Kingdom	195	153	110	67	-43	-39.0
Austria	36	41	46	51	5	10.9
Denmark	0	114	90	49	-41	-45.6
Poland	79	64	50	35	-15	-29.6
Other countries	102	108	123	168	45	36.2
Canada	0	0	59	124	65	111.0
United States	4,230	4,991	5,752	6,513	761	13.2
NORTH AMERICA	4,230	4,991	5,811	6,637	826	14.2

Source: ECE/FAO TIMBER database, 2000.

10.4 Particle board

Particle board production began in the United States and Canada in the late 1940s and shows similar development along the life cycle curve (graph 10.4.1). By the mid 1970s, following almost unbroken, sometimes very rapid growth, it had reached maturity. For a while thereafter it lost market share due to concerns over formaldehyde and the rise of MDF. However, measures to reduce formaldehyde emissions and improve surface and machineability characteristics have enabled it to fend off those challenges and, unlike plywood, maintain its mature status.

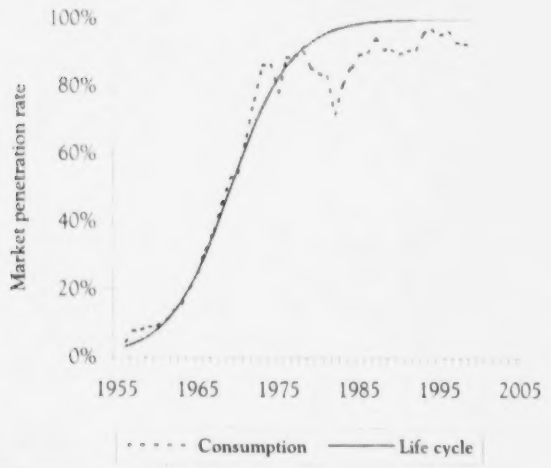
The prospects for particle board can be analyzed in terms of the life cycle model (table 10.4.1). From 1961 when it attained 10% of its market share potential until 1978 when it reached 90%, its production grew at an

annual rate 16.8 . From 1980 to present, its rate of growth shrunk to 2.3% a year, in line with the underlying growth of demand over the past three decades at the hypothetical saturation level of market penetration. Over the next five years, assuming the same historical trend demand growth and a slight recovery of market share, the equilibrium growth in output could be around 3%. This includes particle board made from agricultural fibres such as grass and wheat straw, an area that has seen a recent surge of interest in North America. In numerical terms, this implies an increase of 1.8 million m^3, from 1999's 10.6 million m^3 to 12.5 million m^3 by 2004 (table 10.4.2). Consumption of particle board (excluding OSB) in North America was 2.9% higher in 1999 compared to 1998 and reached 1.8 million m^3. The strong demand was the cause for particle board prices to rise steeply in 1999, 43% on average between January and December. As new capacity came on stream, supply eased and prices in early 2000 are lower than a year before, but nevertheless, higher than the depressed 1996 to 1998 level (graph 10.4.2).

The European particle board sector is bigger than its North American counterpart by about a factor of three. In 1999, its output was reported at 35.2 million m^3 (graph 10.4.3, tables 10.4.3 and 10.4.4), slightly higher than the previous year's record total. Weakness of demand in the end-use sectors during the first half of 1999 was offset by a recovery in the second half which also saw a reduction of stocks. Particle board prices were influenced by the recovery of markets and have strengthened somewhat from very depressed levels.

GRAPH 10.4.1

Life cycle of particle board, 1955-2000



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

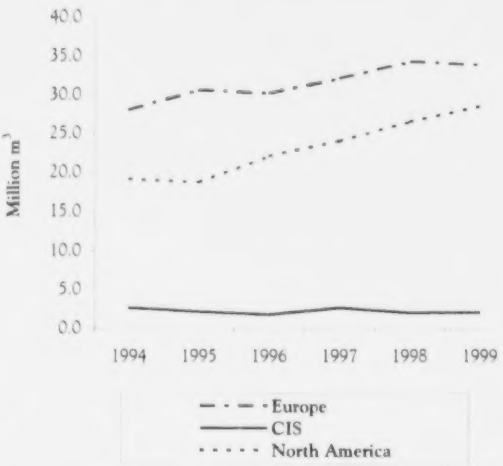
GRAPH 10.4.2

United States particle board prices, 1995-2000

Source: *Random Lengths Yardstick*, 2000.

GRAPH 10.4.3

Consumption of particle board, 1994-1999



Source: ECE/FAO TIMBER database, 2000.

TABLE 10.4.1

United States and Canadian particle board annual rates of growth, 1961-2004

From 10 to 90% of market potential	*From 90% market share to the present*	*Demand growth trend*	*Projected sales 5-year growth*
(1961-1978)	*(1978-1999)*	*(1969-1999)*	*(1999-2004)*
16.8%	2.3%	2.3%	3.0%

Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

TABLE 10.4.2

Particle board balance (excluding OSB) in Canada and the United States, 1998-1999

(1,000 m³)

	1998	*1999*	*%*
CANADA			
Production	2,347	2,436	3.8
Imports	219	263	20.6
Exports	1,074	1,054	-1.9
Apparent consumption	1,491	1,645	10.3
UNITED STATES			
Productions	8,128	8,195	0.8
Imports	1,428	1,416	-0.8
Exports	524	432	-17.6
Apparent consumption	9,032	9,179	1.6

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.4.3

Particle board, including OSB, balance in the ECE region, 1995-1999

(Million m³)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimate for 2000 **
EUROPE						
Production	31.23	31.73	33.82	35.93	36.52	37.88
Imports	7.36	7.06	7.88	9.17	9.20	8.69
Exports	8.05	8.68	9.63	10.39	10.57	10.73
Net trade	0.70	1.62	1.76	1.25	1.39	2.03
Apparent consumption	30.54	30.11	32.08	34.71	35.15	35.85
RUSSIAN FEDERATION						
Production	2.21	1.47	1.49	1.57	1.97	2.45
Imports	0.02	0.05	0.98	0.24	0.10	0.09
Exports	0.17	0.10	0.16	0.10	0.09	0.11
Net trade	0.15	0.04	-0.81	-0.14	-0.01	0.01
Apparent consumption	2.05	1.43	2.30	1.71	1.98	2.43
NORTH AMERICA						
Production	19.74	22.74	24.22	26.69	28.55	29.21
Imports	3.72	4.66	6.21	7.46	8.32	7.68
Exports	4.80	5.36	6.43	7.64	8.37	9.15
Net trade	1.08	0.70	0.22	0.18	0.06	1.47
Apparent consumption	18.66	22.04	24.01	26.50	28.49	27.74

* = The Timber Committee's forecast trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.4.4

Production and trade of particle board, including OSB, 1996-1999

(1,000 m^3)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
PRODUCTION						
EUROPE	31,729	33,825	35,931	36,520	589	1.6
Germany	8,584	9,152	9,300	9,320	19	0.2
France	3,030	3,275	3,483	3,588	105	3.0
Italy	2,205	2,750	2,950	3,070	120	4.1
Spain	1,970	1,970	2,843	2,897	54	1.9
Poland	1,747	2,072	2,474	2,637	163	6.6
Belgium-Luxembourg	3,087	2,565	2,632	2,586	-46	-1.8
United Kingdom	2,164	2,175	2,287	2,439	152	6.6
Austria	1,700	1,771	1,800	1,800	0	0.0
Turkey	1,193	1,728	1,525	1,643	118	7.7
Portugal	695	695	748	719	-29	-3.9
Czech Republic	635	737	790	700	-90	-11.4
Sweden	577	612	650	618	-32	-4.9
Switzerland	530	501	524	525	1	0.2
Ireland	160	200	320	510	190	59.4
Other countries	3,452	3,622	3,605	3,469	-136	-3.8
RUSSIAN FEDERATION	1,472	1,490	1,568	1,969	401	25.6
Canada	6,754	7,961	8,621	10,076	1,455	16.9
United States	15,985	16,263	18,064	18,472	408	2.3
NORTH AMERICA	22,739	24,224	26,685	28,548	1,863	7.0
EXPORTS						
EUROPE	8,679	9,626	10,394	10,568	174	1.7
Belgium-Luxembourg	1,930	2,065	2,175	2,111	-64	-2.9
Germany	1,296	1,544	1,669	1,596	-73	-4.4
Austria	1,134	1,204	1,234	1,184	-50	-4.1
France	1,206	1,252	1,297	1,339	42	3.3
Poland	48	129	315	580	265	84.3
Czech Republic	312	381	405	421	16	4.0
Other countries	2,753	3,051	3,300	3,338	37	1.1
Canada	5,198	6,072	7,026	7,782	756	10.8
United States	158	353	613	591	-22	-3.6
NORTH AMERICA	5,356	6,425	7,639	8,373	734	9.6
IMPORTS						
EUROPE	7,057	7,882	9,166	9,203	37	0.4
Germany	1,559	1,630	1,794	1,522	-272	-15.2
United Kingdom	1,185	1,119	1,153	1,063	-90	-7.8
Netherlands	674	726	720	865	146	20.2
Greece	28	28	680	700	20	3.0
Italy	340	644	642	657	15	2.3
Denmark	303	450	531	640	109	20.5
Other countries	2,968	3,285	3,647	3,755	109	3.0
Canada	301	262	277	387	110	39.7
United States	4,359	5,948	7,180	7,929	749	10.4
NORTH AMERICA	4,660	6,210	7,457	8,316	859	11.5

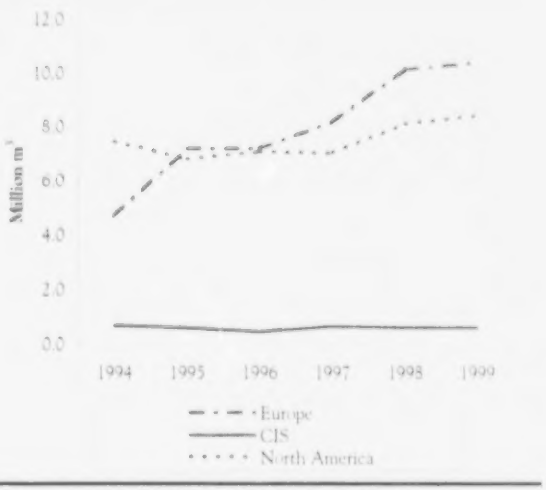
Source: ECE/FAO TIMBER database, 2000.

10.5 Fibreboard

Overall fibreboard consumption increased in 1999 compared to 1998 in both North America and Europe (graph 10.5.1 and tables 10.5.1 and 10.5.2). The increase was 3.7% in North America to 8.5 million m^3, and in Europe 2.8% to 10.4 million m^3. This result is due to MDF which continues to gain market share at a rapid pace, while dry process fibreboards show small year-to-year changes or are regressing. The individual sections below consider more detailed market developments for MDF, hardboard and insulating board.

GRAPH 10.5.1

Consumption of fibreboard, 1994-1999



Source: ECE/FAO TIMBER database, 2000.

10.6 Medium Density Fibreboard

In the United States production of MDF began in the mid 1960s. It is a refined, premium composite with a more uniform cross section as compared to particle board. Its use is prominent in furniture and cabinetry where edge profiling is needed. Where only a flat corestock with an unexposed edge is required, the less costly particle board is often adequate. So MDF has substituted for some particle

TABLE 10.5.1

Fibreboard balance in Europe, the Russian Federation and North America, 1995-1999

(Million m^3)

	1995	*1996*	*1997*	*1998*	*1999*	*Timber Committee estimate for 2000 **
EUROPE						
Production	7.51	7.52	8.75	10.36	10.85	11.31
Imports	2.81	3.35	4.50	5.29	5.54	5.45
Exports	3.11	3.57	4.69	5.17	5.44	5.61
Net trade	0.42	0.23	0.21	-0.10	0.02	0.16
Apparent consumption	7.16	7.23	8.25	10.15	10.43	11.15
RUSSIAN FEDERATION						
Production	0.75	0.59	0.75	0.62	0.77	0.86
Imports	0.01	0.02	0.06	0.15	0.13	0.14
Exports	0.13	0.17	0.17	0.17	0.26	0.29
Net trade	0.13	0.16	0.11	0.03	0.13	0.15
Apparent consumption	0.62	0.43	0.64	0.59	0.64	0.71
NORTH AMERICA						
Production	7.23	7.31	7.32	8.24	8.43	8.53
Imports	0.68	0.89	1.08	1.24	1.65	1.67
Exports	1.09	1.12	1.34	1.33	1.62	1.75
Net trade	0.41	0.22	0.27	0.09	-0.03	0.08
Apparent consumption	6.81	7.09	7.05	8.16	8.46	8.45

* The Timber Committee's estimated trend from the September 1999 session was applied to the 1999 figure.

Source: ECE/FAO TIMBER database, 2000.

TABLE 10.5.2

Production and trade of fibreboard, 1996-1999

(1,000 m³)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
PRODUCTION						
EUROPE						
Hardboard	2,276	2,457	2,897	2,680	-217	-7.5
MDF	4,348	5,514	6,619	7,299	680	10.3
Insulating board	892	774	847	883	36	4.2
Total Fibreboard	7,516	8,745	10,364	10,862	499	4.8
of which :						
Germany	900	1,895	1,985	2,506	521	26.2
Italy	1,500	1,300	1,450	1,260	-190	-13.1
Spain	590	590	1,140	1,135	-5	-0.4
Poland	653	733	975	1,060	85	8.7
France	512	540	801	873	71	8.9
Other countries	3,361	3,687	4,012	4,029	17	0.4
Russian Federation	589	749	618	771	153	24.8
Canada	894	1,056	1,245	1,454	209	16.8
United States	6,415	6,262	7,000	6,977	-23	-0.3
NORTH AMERICA	7,309	7,318	8,245	8,431	186	2.3
EXPORTS						
EUROPE	3,574	4,685	5,168	5,438	270	5.2
Germany	522	770	1,017	1,149	132	13.0
France	466	538	527	673	146	27.7
Italy	395	574	483	472	-11	-2.3
Poland	293	332	454	455	1	0.3
Spain	290	289	237	256	19	8.0
Other countries	1,608	2,183	2,450	2,433	-17	-0.7
Russian Federation	173	174	173	255	82	47.4
Canada	497	744	883	1,146	263	29.8
United States	618	600	448	469	21	4.7
NORTH AMERICA	1,115	1,344	1,331	1,615	284	21.4
IMPORTS						
EUROPE	3,351	4,499	5,285	5,536	251	4.7
United Kingdom	599	755	891	772	-119	-13.3
Netherlands	304	457	537	604	67	12.5
Germany	497	561	675	603	-72	-10.7
France	181	275	365	461	96	26.2
Other countries	1,770	2,451	2,817	3,096	279	9.9
Canada	218	211	212	251	38	18.1
United States	675	867	1,032	1,395	363	35.2
NORTH AMERICA	893	1,078	1,244	1,646	401	32.3

Source: ECE/FAO TIMBER database, 2000.

board as well as for solid wood in the middle price range of the market. It is arguably still a growth industry, so its position on its life cycle curve is a matter of some uncertainty, but in general it appears well advanced and capacity stands at over 4.5 million m^3 (graph 10.6.1).

Over the last five years seven new plants were brought into production in North America creating an additional 1.9 million m^3 of capacity. The market absorbed this two-thirds increase with some difficulty. Profit margins weakened as prices fell by about a quarter. The year 1999 however, could be characterized as one of consolidation in which markets adjusted to and absorbed the new supply in Canada, where production rose by 25.4% to just under 900,000 m^3. Canadian exports to the United States were up 40% to 222,000 m^3 and North American consumption reached 3.4 million m^3 in 1999, a 7.3% increase (table 10.6.1). Prices stabilized and recovered some, though not all, of the lost ground.

From 1965 when MDF attained 10% of its market share potential to present, its annual rate of growth averaged 10.6% (table 10.6.2). Its estimated market penetration level is now about 80%. The underlying demand growth at its hypothetical full penetration level over the last three decades was just under 3% per year. Extrapolation of the life cycle curve suggests that by 2004 it could advance to 89%. That, in combination with continuation of demand growth at the trend level, would imply a growth rate in production of about 6% per year. If such growth materializes, however, it is likely to occur toward the outer end of the period as recent capacity growth and potential cyclical weakness in markets due to rising interest rates will likely postpone new construction plans.

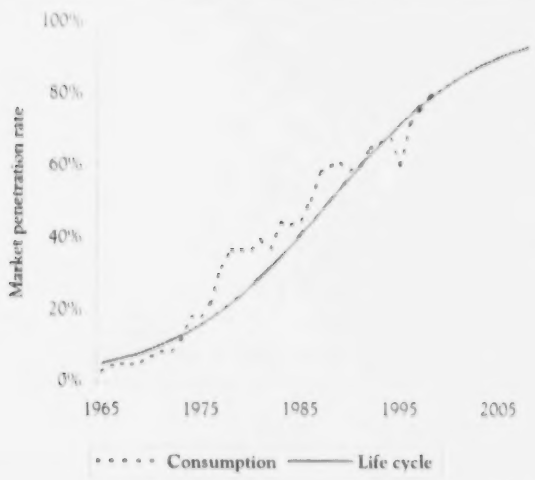
Though having started later, Europe's MDF industry has surpassed North America in production volume (graph 10.6.2). In 1999, production was reported at 7.3 million m^3, 10.3% higher than the prior year's volume. With several projects nearing completion, European MDF production is likely to continue on its more rapid growth track in 2000 as well.

Demand in Europe has not followed at the same pace the rapid production growth of MDF and prices have been under pressure. There was a sharp fall of all MDF prices towards the end of 1999. Several price increases have taken place in the first months of 2000, partly due to higher costs of glues and resins.

MDF is still a new product in the Russian Federation, production in 1999 reached 135,000 m^3 a 68% increase from the previous year.

GRAPH 10.6.1

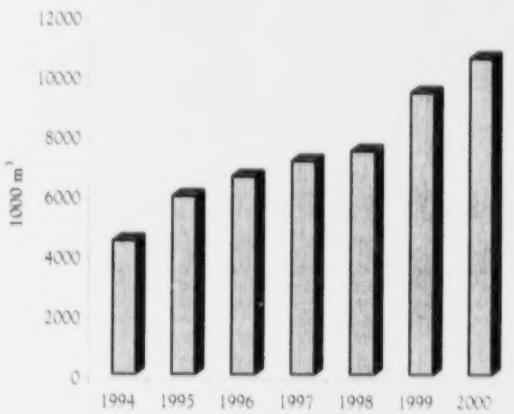
Life cycle of MDF, 1960-2005



Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

GRAPH 10.6.2

MDF production capacity in Europe, 1994-2000



Source: European Panel Federation, 2000.

TABLE 10.6.2

North American MDF annual rates of growth, 1973-2004

From 10% market share to the present	*Demand growth trend*	*Projected sales 5-year growth*
(1973-1999)	*(1969-1999)*	*(1999-2004)*
10.6%	2.9%	6.0%

Source: Spelter, H., USDA Forest Service, Forest Products Laboratory, 2000.

TABLE 10.6.1

Production and trade of MDF, 1996-1999

(1,000 m³)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
PRODUCTION						
EUROPE	4,348	5,514	6,619	7,299	680	10.3
of which:						
Germany	710	1,495	1,566	2,032	466	29.8
Spain	490	490	969	962	-7	-0.8
France	363	416	636	698	61	9.6
Italy	700	600	650	650	0	0.0
Poland	196	246	500	612	112	22.4
Belgium-Luxembourg	440	461	483	504	22	4.5
Other countries	1,449	1,806	1,815	1,842	27	1.5
Russian Federation	0	84	80	135	55	68.8
Canada	215	289	712	893	181	25.4
United States	2,057	2,402	2,480	2,501	21	0.8
NORTH AMERICA	2,272	2,691	3,192	3,394	202	6.3
EXPORTS						
EUROPE	1,840	2,540	2,794	2,928	134	4.8
of which:						
Germany	300	434	513	533	20	3.9
France	316	354	328	509	181	55.3
Belgium-Luxembourg	14	205	395	395	0	0.0
Italy	286	435	342	327	-15	-4.4
Other countries	924	1,112	1,216	1,164	-52	-4.3
Russian Federation	0	0	0	0		
Canada	157	338	552	774	222	40.1
United States	114	128	171	189	18	10.5
NORTH AMERICA	271	466	723	963	240	33.1
IMPORTS						
EUROPE	1,555	2,277	2,621	2,764	143	5.5
of which:						
United Kingdom	337	462	572	496	-75	-13.2
Netherlands	172	228	313	351	38	12.1
Spain	172	297	230	326	96	41.6
France	90	169	209	321	113	53.9
Other countries	784	1,121	1,297	1,269	-28	-2.1
Russian Federation	0	64	54	40	-14	-25.9
Canada	112	95	92	113	21	23.2
United States	206	373	612	860	248	40.5
NORTH AMERICA	318	468	704	973	269	38.3

Source: ECE/FAO TIMBER database, 2000.

10.7 Hardboard

European consumption of hardboard fell in 1999 by 9.5% to 2.9 million m^3. Production in Italy, the main producer was down 23.8% to 610,000 m^3 (table 10.7.1). Hardboard is loosing market share to thin MDF, but has been successful in maintaining the door market. During 1999 prices continued to fall, but some recovery has taken place in 2000.

In North America consumption of hardboard showed little change in 1999 from the previous year, it was 2% higher and reached 1.4 million m^3. Consumption in the Russian Federation also showed a small increase of 3.2% to 457,000 m^3.

TABLE 10.7.1

Production and trade of hardboard, 1996-1999

(1,000 m^3)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
PRODUCTION						
EUROPE	2,276	2,457	2,897	2,680	-217	-7.5
of which:						
Italy	800	700	800	610	-190	-23.8
Germany	140	295	309	336	27	8.7
Poland	285	310	289	249	-40	-13.8
Other countries	1,051	1,152	1,499	1,485	-14	-0.9
Russian Federation	570	601	525	623	98	18.7
Canada	254	342	108	136	28	25.7
United States	1,558	1,328	1,269	1,225	-44	-3.5
NORTH AMERICA	1,812	1,670	1,377	1,361	-16	-1.2
EXPORTS						
EUROPE	1,107	1,335	1,563	1,649	85	5.5
of which:						
Germany	179	283	453	557	104	23.0
Poland	67	96	105	160	55	53.0
Estonia	140	129	170	157	-13	-7.4
Other countries	721	827	836	774	-62	-7.4
Russian Federation	173	174	173	255	82	47.4
Canada	213	276	221	244	22	10.1
United States	419	390	155	158	3	1.9
NORTH AMERICA	632	666	376	402	25	6.8
IMPORTS						
EUROPE	1,218	1,400	1,841	1,841	1	0.0
of which:						
Denmark	100	141	133	232	99	74.4
Germany	208	215	279	221	-58	-20.8
Belgium-Luxembourg	115	73	99	151	52	51.9
Other countries	795	971	1,329	1,238	-92	-6.9
Russian Federation	16	0	91	89	-2	-2.7
Canada	70	74	78	72	-6	-7.5
United States	349	385	263	339	76	28.9
NORTH AMERICA	419	459	341	411	70	20.6

Source: ECE/FAO TIMBER database, 2000.

10.8 Insulating board

Consumption of insulating board in Europe rose by 10.7% to 953,000 m^3 (table 10.8.1). In North America consumption in 1999 was around the previous year level and reached 3.7 million m^3.

TABLE 10.8.1

Production and trade of insulating board, 1996-1999

(1,000 m^3)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
PRODUCTION						
EUROPE	892	774	847	883	36	4.2
of which:						
Poland	172	177	186	199	13	7.0
Germany	50	105	110	138	28	25.0
Switzerland	110	115	110	120	10	9.1
Other countries	452	274	335	334	-1	-0.4
Russian Federation	19	64	13	13	0	0.0
Canada	425	425	425	425	0	0.0
United States	2,800	2,532	3,251	3,251	0	0.0
NORTH AMERICA	3,225	2,957	3,676	3,676	0	0.0
EXPORTS						
EUROPE	628	811	810	861	51	6.3
of which:						
Poland	111	132	138	155	17	12.6
Switzerland	56	75	116	129	13	10.8
Other countries	268	328	298	285	-13	-4.3
Canada	127	130	110	129	19	17.5
United States	85	82	122	122	0	0.0
NORTH AMERICA	212	212	232	251	19	8.3
IMPORTS						
EUROPE	578	822	824	931	107	13.0
of which:						
Netherlands	55	151	142	179	37	26.1
Germany	132	126	126	136	10	7.9
United Kingdom	92	95	128	135	7	5.4
Italy	130	71	77	128	51	66.2
Other countries	169	379	351	353	2	0.6
Canada	36	42	42	65	23	54.4
United States	120	109	157	196	39	24.8
NORTH AMERICA	156	151	199	261	62	31.1

Source: ECE/FAO TIMBER database, 2000.

Chapter 11
Engineered Wood Products – Production, Trade, Consumption and Outlook [1]

Highlights

- Engineered Wood Products (EWPs) manufacture and use is expanding globally. Glued laminated timbers are being employed worldwide, while structural wood I-beams and LVL are primarily a North American phenomenon. However, LVL use is rapidly gaining popularity in Asian markets.
- Two key forces driving North American demand are prevalence of wood-frame construction and the changing nature of softwood fibre supply.
- North American I-beam production grew 27% in 1999 while North American LVL production grew 21%. EWPs now constitute more than 5% of North American softwood dimension lumber[2] (sawnwood) supply.
- EWPs in North America, Japan, and the Nordic countries are consumed primarily in structural applications in residential markets. In continental Europe, both structural and nonstructural applications drive demand in both residential and commercial markets.
- EWPs demand in Europe and Japan is also growing with greatest potential in Japan as the Japanese industry increasingly adopts these products in the traditional post and beam housing sector.
- Trade in EWPs is small compared with that of other wood products, but as a percentage of their production, the volume of trade is significant. North America, Japan, and Europe consume most of their own production in residential construction end uses. The largest trade flow is of glulam – primarily from North America and Europe to Japan.
- The outlook for EWPs is excellent with much of the impetus coming from the global need for efficient construction techniques, growing environmental concerns, and the universal requirement for affordable shelter.

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[2] Softwood dimension lumber is sawnwood produced to standard sizes for construction purposes.

Secretariat note

This special chapter highlights an exciting growth market for forest products. EWPs are reconstituted flakes, fibres and veneers which produce products with uniform strength properties to fulfil new demands for wood products and replace some traditional uses.

The secretariat expresses its gratitude to the principal authors, Dr. Al Schuler and Mr. Craig Adair.

Dr. Schuler spent ten years as Manager of Economics and Market Research for Norbord Industries, a major North American producer of OSB and other solid wood products. He is now a Research Economist with the North East Forest Experiment Station of the USDA Forest Service. Mr. Adair has twenty-nine years of experience in the forest products industry with the past eleven years as Director of Market Research for The Engineered Wood Association (APA). Information for this chapter came from a variety of sources with APA providing the bulk of production and trade statistics. Mr. Ed Elias, Director, International Marketing Division, APA, supplied much of the international statistics. The APA information was supplemented by Jaakko Poyry Consulting or data provided by Mr. David Giroux, Vice President, Business Strategies, and data extracted from Dr. O'Carroll's report (Pullman Particleboard Symposium, April 2000) entitled "LVL and Engineered Wood Products Business in Europe". Although reasonably good statistics on production by country are available, there are less data on international trade flows. The main problem seems to be lack of tariff classifications for I-Joists and LVL trade. The authors relied on extensive experience in EWPs to analyse current and future trends in EWPs.

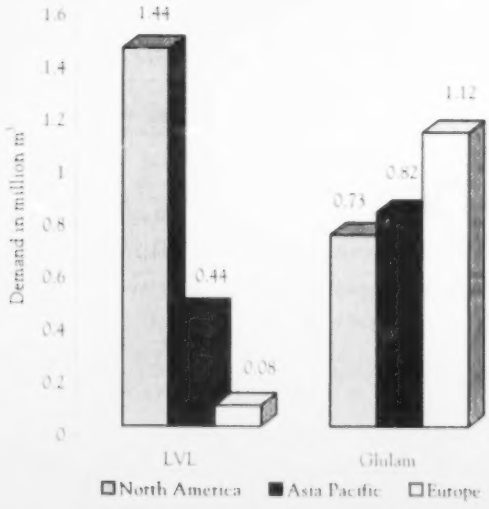
11.1 Introduction

For the purposes of this report, we will define engineered wood products (EWPs) as primarily those products used as substitutes for conventional softwood dimension lumber in markets where structural applications predominate. In current literature, these engineered wood product materials are often designated as "engineered lumber products", and include laminated veneer lumber (LVL), structural wood I-Beams, glued laminated timber (glulam), machine stress rated (MSR) lumber, finger jointed (FJ) lumber, and proprietary products such as parallel strand lumber (PSL) (Parallam™) and oriented strand lumber (OSL) (Timberstrand™). "Lumber" is sawnwood boards. (See box of definitions and abbreviations.) The majority of the statistics found in this report will focus on the three EWP that dominate worldwide production capacity - LVL, I-beams, and glulams. We should also mention that many researchers include oriented strand board (OSB), medium density fibreboard (MDF), and particle board in the EWPs category, however, these and other panels products are covered in another chapter of the Market Review.

On a total volume basis, EWPs are primarily a North American phenomenon. Graphs 11.1.1 and 11.1.2 present the regional market comparisons for glulam, LVL,

GRAPH 11.1.1

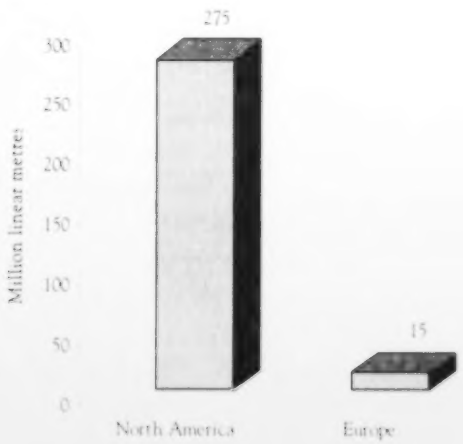
Regional markets for glulam and LVL, 1999



Sources: APA, 2000; Japan Customs Bureau, 2000 and Jaakko Pöyry, 2000.

GRAPH 11.1.2

I-beam production in North America and Europe, 1999

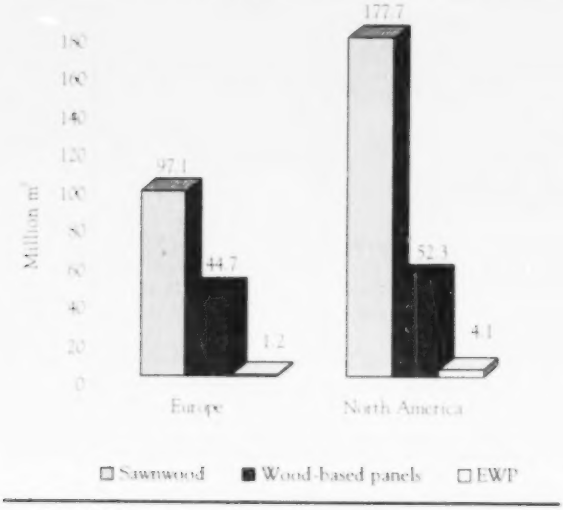


Sources: APA, 2000; and Jaakko Pöyry, 2000.

and structural wood I- beams. The glulam statistics for the Asia Pacific region are really only for Japan. EWPs are growing quickly in consumption in the ECE region, especially in North America and Europe, although they are currently a small market compared to sawnwood and wood-based panels (graph 11.1.3).

GRAPH 11.1.3

Consumption of sawnwood, wood-based panels and EWPs in Europe and North America, 1998



Note: EWP includes: Glulam, LVL and I-Beams.

Sources: APA, 2000; Jaakko Pöyry, 1999; and TIMBER database, 2000.

11.2 Current market situation

11.2.1 North America.

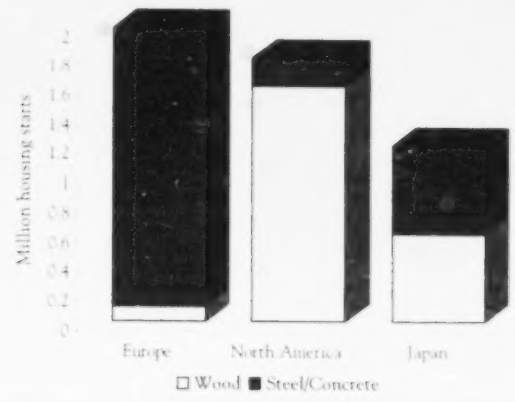
There are two key forces driving demand for EWPs in North America: the prevalence of wood frame construction (graph 11.2.1); and the changing nature of the softwood fibre supply (graph 11.2.2).

North American production has grown rapidly during the 1990s and currently constitutes 5% of North American softwood dimension/structural lumber (sawnwood) consumption. The level of housing starts and the fact that 90% of the homes built in North America are wood frame, dominate engineered wood product use in North America. European housing, by contrast, is only 10% wood based and 90% steel/concrete. In Japan, housing is about 50% wood-based and 50% steel or steel and concrete.

Conversely, the performance properties and good value of EWPs make wood-frame housing attractive. Furthermore, the North American population is aging, and this appears to be encouraging builders to switch to labour saving materials and construction techniques, many of which involve EWPs. The wood products industry wants to hold onto its most important market – residential construction – and it believes that modern EWPs will help fend off non wood building materials such as steel and concrete. Additionally, EWPs should provide wood building materials a better chance at penetrating non-residential construction markets which are currently using primarily steel and concrete.

GRAPH 11.2.1

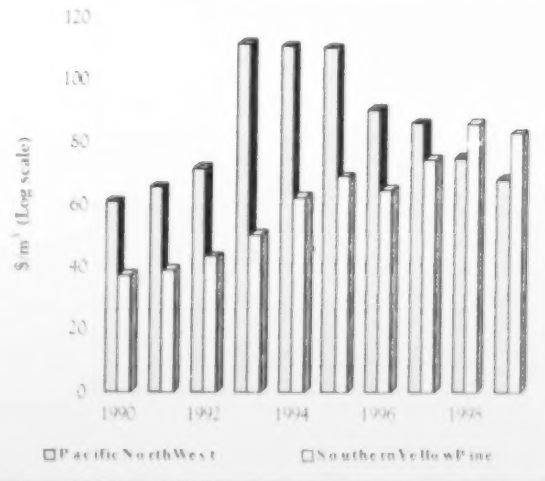
Wood frame construction



Sources: APA 2000; Japan Customs Bureau, 2000 and Jaakko Pöyry, 2000.

GRAPH 11.2.2

Regional fibre cost (sawlog stumpage), 1990-1999

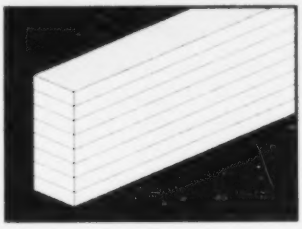


Source: Resource Information Systems (*Wood Products Review*, 2000).

Glossary of Engineered Wood Products

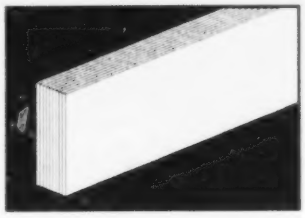
APA classifies glued engineered wood products into three general groups: 1) glued laminated timber (glulam), 2) structural composite lumber (SCL) consisting primarily of laminated veneer lumber (LVL), but also parallel strand lumber and oriented strand lumber, and 3) wood I-beams.

Glued Laminated Timber (Glulam)



Glulam is an engineered stress-rated product created by adhesively bonding together individual pieces of lumber having a thickness of 50 mm (2 inches) or less. It's one of the most versatile of the engineered wood products. It can be easily shaped into forms ranging from straight beams to complex curved members and is used for a wide variety of structural applications in both residential and non-residential construction. Glulam is used typically for headers, girders, purlins, beams, arches, and in exposed applications such as bridges, marinas and transmission structures.

Structural-composite lumber

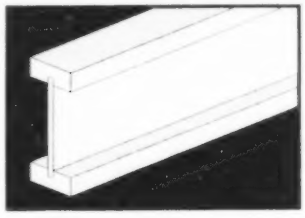


Laminated Veneer Lumber (LVL): LVL is the most widely used of the structural composite lumber products. It is produced by adhesively bonding thin wood veneers together in a large billet so that the grain of all veneers is parallel to the long direction. The LVL billet is then sawn to desired dimensions depending on the construction application. Some of the many uses are in header and beam applications, hip and valley rafters, as scaffold planking and as flange material for wood I-beams.

Parallel Strand Lumber (PSL): PSL consists of long veneer strands laid in parallel formation and bonded together with an adhesive to form beams. Like LVL and glulam, this product is used for beam and header applications where high bending strength is needed.

Oriented Strand Lumber (OSL): Similar to PSL, oriented strand lumber is made from flaked wood strands that have a high length-to-thickness ratio. Combined with an adhesive, the strands are oriented and formed into a large mat or billet and pressed. OSL is used in a variety of applications from studs to millwork components.

Wood I-Beams



Wood I-beams are structural, load-carrying products designed mostly for floor joist applications and are sometimes called I-joists. The beams offer long length and low material weight. Their "I" configuration provides high strength and stiffness. The flange material for I-beams is typically dimension lumber or LVL; the web material is typically oriented strand board (OSB) or plywood. Wood I-beams, used extensively in residential construction, continue to be the fastest growing of the glued engineered wood products.

Machine stress-rated lumber (MSR)

MSR is visually graded lumber that has been stress rated by machine for its modulus of elasticity and fibre bending strength. In addition, more stringent visual grading standards are applied, e.g. less wane than visually graded lumber.

Finger-jointed lumber (FJ)

FJ lumber is short pieces of lumber, finger jointed end-to-end to produce long boards.

Lumber prices and price volatility increased substantially in the 1990s as the wood products industry struggled with a dramatic reduction in availability of old growth softwood fibre from public timber supplies in western United States and Canada as well as exceptionally strong demand over a long period. For example, between 1989 and 1998, softwood timber supplies from Washington and Oregon fell 50% as court orders severely restricted harvest on Federal lands. These two states, accounted for more than half the softwood fibre in the Pacific Northwest, and an even larger percentage of "old growth". Sawn softwood production in the Western Region (Pacific Northwest, Inland Empire[3], and Northern California) fell 35% from the historical peak of 56 million m^3 in 1987 to 36.8 million m^3 in 1995. The changes in the availability of public timber were mandated in part by a shift in public attitudes toward "old growth management", and this in turn changed the nature of future softwood harvest in two important ways: harvests from private lands now constitute almost 75% of the softwood harvest in the Pacific Northwest, and the majority of the private inventory is 2nd and 3rd growth as compared to "old growth" on public lands. The sawnwood produced from the smaller diameter trees from the 2nd and 3rd growth forest has more juvenile wood and more knots. Sawnwood produced from the "younger forest" generally has diminished strength properties and reduced in-service performance.

During this same period, performance-based building codes[4] were adopted, and rapid advances were being made in resin technology. These events helped the EWPs industry to tap into vast volumes of underutilized, fast growing, relatively inexpensive fibre. Although the bulk of the available volume is in the form of low density hardwoods, softwood thinnings make additional low cost fibre available. Furthermore, new conversion technology (e.g. flaking machines, press technology and drying systems) allowed the industry to transform what were formerly "weed species" such as aspen, birch, red maple and sweetgum, into EWPs with superior performance properties.

As production capacity moved from the Pacific Northwest to the South, pressure was put on the softwood fibre resulting in higher sawlog costs and loss of competitive advantage. Southern yellow pine fibre, as noted in graph 11.2.2, is now more expensive than softwood in the Pacific Northwest according to recent reports from Resource Information Systems (*Wood Products Review*, 2000).

EWPs have two major efficiency-related advantages that should enhance their continued growth in residential and non-residential applications. (1) mechanical (uniform strength) properties that enhance design values and enable more efficient installation; and (2) more efficient conversion technology which results in higher final product yield from the resource. Final product yield from sawmilling averages 40% from the log with bark, while yields of LVL are 52%; Parallam™ about 65% (Truss Joist Macmillan, 1999); and Timberstrand™ about 75% (Truss Joist Macmillan Annual Report, 1999). Furthermore, EWP prices have remained relatively stable – a factor favoured by large builders who pre-sell many of their homes.

Cost savings for EWPs are often measured in terms of labour savings. For example, installing one LVL beam for a garage door header takes less time than the conventional method of nailing two 2x10s together to form the equivalent (table 11.2.1). Another example is where a traditional wood floor system takes 133 pieces of lumber while an I-beam floor has only 80, hence less labour.

In most cases EWPs cost more per linear foot than conventional materials, but they save labour and are stronger. In the example above, the "installed" cost of a I-joist floor system is comparable to a traditional 2x10 system. Hence, EWPs are often a better value.

There is currently a skilled-labour shortage in the North American building construction industry resulting from a combination of tight labour markets (the unemployment rate has fallen to 4%, a 30-year low) and demographics. Recent demographic studies suggest the problem will get worse in the new millennium as the North American population ages. Not only are fewer young people (roughly 20 to 35 years old) working in construction, but less young people are seeking jobs in construction (*Engineered Wood Journal*, 2000). These trends are forcing builders to adapt labour-saving building techniques including various forms of manufactured housing such as modular (manufactured in 2 to 6 modules in a factory), mobile homes, and panelized housing, (panels manufactured in a factory), (*Automated Builder*, 2000) (graph 11.2.3). Stick-built (sometimes referred to as "site-built") housing now constitutes less than 1/3 of United States housing starts (*Automated Builder*, 2000). In addition, shipments by the lumber components industry (roof and floor trusses, and wall panels) have

[3] The Inland Empire of the western United States includes eastern Washington, eastern Oregon, Idaho, Montana, Colorado, Arizona, Utah and New Mexico.

[4] I.e. building codes which instead of specifying materials or production methods define performance standards to be achieved. This avoids distortion and does not discriminate against new processes. An example is when old codes specified plywood where a new performance-based code specified load bearing and other engineering performance requirements.

increased from 1.5 billion dollars in 1992 to an expected $3 billion by 2002.

For the above reasons, EWP demand grew rapidly in North America during the 1990s as described below in graph 11.2.4. LVL is used mostly in North America as flange material for I-beams (60%) with the remainder being used primarily in structural beam applications including garage door headers, purlins, supporting beams, and the like. I-beams are used primarily in floor joist and roof rafter applications in North American platform frame construction.

11.2.2 Europe

In Europe, glulam is the dominant EWP. Glulam is used primarily as load bearing structural members in commercial and industrial applications. These applications take the form of beams, arches, and columns, typically with a rectangular cross section.

According to Jaakko Poyry research, glulam makes up almost 95% of Europe's consumption of EWPs. Europe not only consumes large quantities, but is also a major exporter, with the bulk of the exports going to Japan.

TABLE 11.2.1

Examples of efficient applications using EWPs

Applications	*Conventional solution*	*EWP Solution*
Garage door headers [1]	Two 2x10s [2] nailed together	One LVL beam
Floor system	Conventional floor with 133 pieces	I-Joist system with 80 pieces (40% less)
Carrying beams [3]	Three or four 2x12s nailed together One steel I-Beam	One 3½" LVL beam, One Parallam beam
Roof truss	Metal plate wood truss with conventional lumber chords [4]	Metal plate wood truss with MSR chords (25% less lumber)

[1] Headers span door and window openings to distribute the load from above.

[2] "2x10s" are softwood lumber measuring nominally 2 inches by 10 inches in cross section.

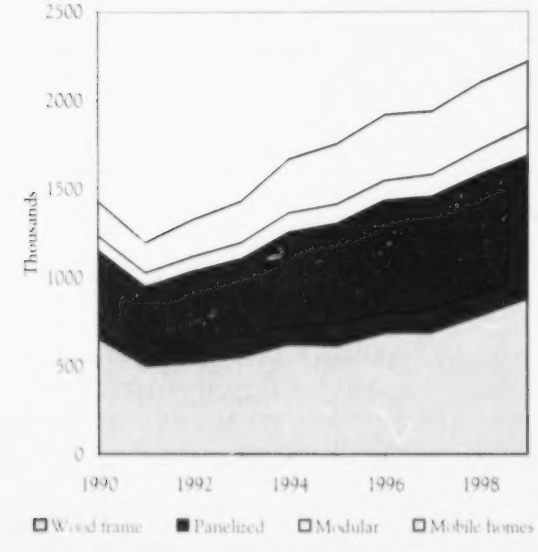
[3] Carrying beams support loads from above and span openings below.

[4] Chords are the top and bottom members of a truss, a pre-manufactured component used to support a roof, and more recently floors.

Source: Truss Joist Macmillan, 2000.

GRAPH 11.2.3

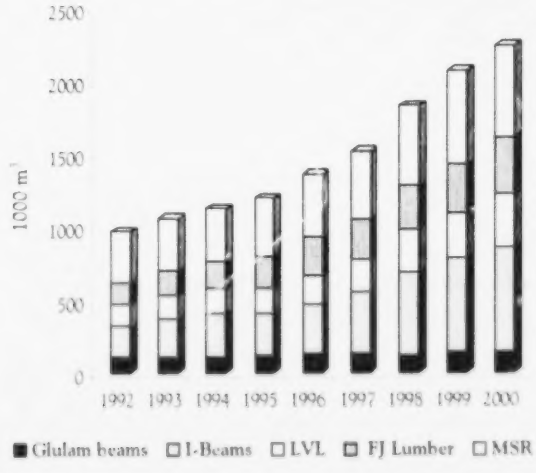
North American manufactured housing vs. Wood-frame construction



Source: *Automated Builder*, 2000.

GRAPH 11.2.4

Engineered wood product applications in North America



Note: For 2000, estimated data.

Source: Russ Taylor and Associates, 2000.

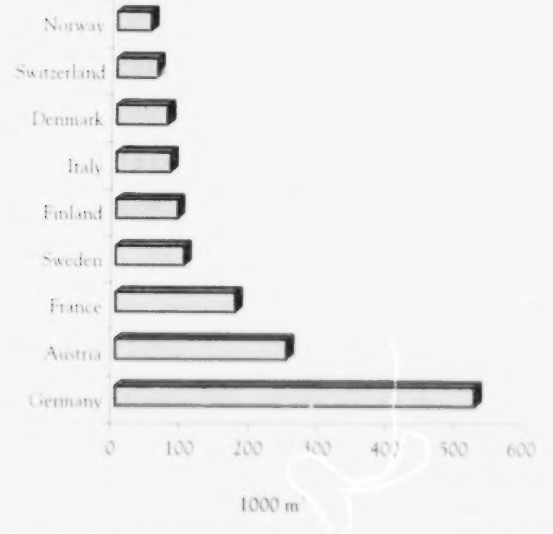
Glulam is the most heavily traded EWP within Europe, with the largest percentage of the domestic trade between Austria and the Nordic countries and the rest of Europe. The bulk of the intercontinental trade is from Austria and the Nordic countries to Japan. Germany is the leading European producer (graph 11.2.5) and the largest consumer of glulam on a per capita basis in the world.

In 1997, Europe was estimated to have consumed 80,000 m^3 of LVL. LVL beams, trusses, and studs are common with only two Nordic producers supplying most of Europe's requirements and a small amount coming from North America. European applications favour engineered constructions, 80% as estimated by Jaakko Poyry and about 20% in I-beam or beam/header type applications. Application usage is split equally between residential and commercial structures. Germany accounts for 35% of the consumption, followed by the Nordic countries (30%), France (10%), and the remaining 25% scattered throughout Europe. In Germany some very large and complicated engineering structures and renovation projects utilize LVL. In central Europe, and especially Switzerland, LVL is used as a slab structure for roofs, while in France LVL portal frame structures are common. A small amount of non-structural LVL is also used in the manufacture of stairs, windows and door frames.

In Europe, I-beam usage is present but it is of low volume (5% of North America consumption) with the main application being supporting members for concrete forming systems. Four Austrian manufacturers produce about 85% of the European structural wood I-beams (Jaakko Poyry).

GRAPH 11.2.5

Glulam production in Europe, 1999 [1]



[1] Estimate.

Source: Jaakko Poyry, 1999.

11.2.3 Asia Pacific

Japan is both the largest consumer and producer of EWPs in the Asia Pacific region. The main products are LVL and glulam, with imports making up one-third of demand. The major supplying countries include Indonesia, New Zealand and Australia, with the latter two countries now starting to consume more EWPs domestically in residential construction. Malaysia and China are two more countries exporting to Japan.

Japan's imports of glulam increased by about 80% in 1999 over 1998, which was a weak year due to the Asian financial crisis. In the last two years Russia began exporting glulam to Japan (table 11.2.2 based on data from Zentral Markt-und Preisberichtstelle für Erzeugnisse der Land-, Forst- und Ernährungswirtschaft (ZMP) as reported by *Holz Journal*, 2000).

Wood product consumption in Japan continues to be impacted by Japan's overall weak economic situation and the weakness of the Japanese housing market, which accounts for a major share of the overall demand for wood products including engineered wood (see chapter 2).

The Japanese market is comprized of two major segments; wood-frame construction accounts for almost half of starts. The wood-frame sector has three sub sectors: traditional post and beam construction; Japanese light-frame construction; and pre-fabricated structures. Post and beam housing dominates the wood-frame sector with over 80% share (table 11.2.3).

The significance of the post and beam sector is that it is the residential sector that employs the most EWPs. As much as 86% of the imported glulam into Japan has been estimated as having gone into this housing sub sector. A recent survey of fifty large post and beam builders (Nikkan Mokuzai Shimbun, 1998) indicated that a major use of glulam was as long-span beams, posts or as sills. The glulam growth is the result of a growing need for EWPs as a substitute for green solid lumber and other conventional lumber products as the Japanese housing sector attempts to upgrade the quality of house construction in Japan.

Although there is small I-beam usage in Japan in the growing market for platform-frame construction, consumption to date is estimated to be less than 2 million lineal metres. All I-beams are imported from North America as there is no domestic production.

Regarding LVL and glulam markets, Japan is quite different from North American and European usage in that a significant share is used in non-structural, mostly decorative applications in furniture, fixtures and

components. In fact, non-structural uses made up 80% of 1998 Japanese LVL demand. In addition, hardwood LVL makes up half of Japanese LVL consumption (APA and the Japanese LVL Association) (graph 11.2.6). For comparison, in North America most of the LVL produced is softwood-based while all LVL in Europe is softwood.

The Asia Pacific market including Japan was estimated to have consumed 410,000 m^3 of LVL in 1999. Japan produced 280,000 m^3, followed by Australia and New Zealand with an additional 80,000 m^3 combined. LVL in Australia is used primarily in construction applications. There is one large mill producing LVL in Australia and the remainder of the production is obtained from plywood mills diversifying their product lines. Australia consumes an estimated 44,000 m^3 (graph 11.2.7).

TABLE 11.2.2

Sources of Japan's imports of glulam, 1997-1999

(m^3)

	1997	*1998*	*1999*	*1999/1998*
				%
Austria	6,092	17,927	50,043	+ 179.1
United States	91,254	29,516	42,392	+ 43.6
Sweden	42,649	19,640	39,473	+ 101.0
Finland	16,041	12,737	33,151	+ 160.3
Germany	39,136	10,062	31,020	+ 208.3
Russia	0	23,630	26,280	+ 11.2
Canada	36,930	17,424	24,535	+ 40.8
New Zealand	7,325	7,789	11,417	+ 46.6
China	4,794	3,560	6,944	+ 95.1
Netherlands	8,916	3,273	1,133	- 65.4

Note: Data not entirely consistent with official data in table 11.3.4, but shown because of detail of source of imports.

Sources: ZMP and the Japan Laminated Wood Industrial Cooperative Association, 2000.

TABLE 11.2.3

Japanese housing starts by method of construction

	Post & Beam	*Platform Frame*	*Pre-Fab.*	*Non-wood*	*Total*
1994	619,103	64,037	38,291	848,822	1,570,252
1995	554,690	73,989	37,445	804,206	1,470,330
1996	619,028	93,693	41,575	888,970	1,643,266
1997	497,843	79,458	34,015	775,698	1,387,014
1998	447,287	67,923	29,923	653,162	1,198,295
1999	458,146	75,864	31,534	649,057	1,214,601

Source: Japanese Ministry of Construction, 2000.

TABLE 11.2.4

Estimated glulam consumption in Japan by type of housing

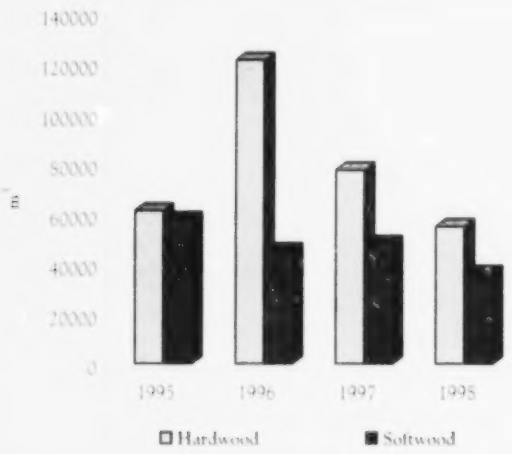
	1995	*1996*	*1997*	*1998*	*1999*	*2000(forecast)*
Post & beam housing starts	554,690	619,028	497,843	447,287	484,344	494,388
Glulam in beams (m^3)	25,000	139,000	112,000	201,000	218,000	334,000
Glulam in posts (m^3)	238,000	285,000	286,000	309,000	390,000	455,000

Source: Sumitomo Forestry, 2000.

In New Zealand, two LVL mills produce approximately 40,000 m^3 annually of structural and non-structural LVL destined for Japan. Consumption within New Zealand is nil. Meanwhile, in both Indonesia and Malaysia, the combined production of LVL is approximately 60,000 m^3 per year, again destined primarily for Japan.

GRAPH 11.2.6

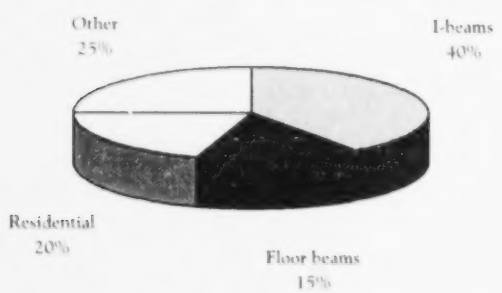
Japanese LVL production, 1995-1998



Source: Japanese LVL Association, 1999.

GRAPH 11.2.7

Estimated LVL consumption in Australia, 1999



Source: RWS Engineering Ltd., 2000.

11.3 Production, consumption and trade statistics

Statistics for EWPs are not as readily available as they are for other wood products due to the relative infancy of this industry. Therefore, the statistical tables in this section will not be as complete as in other *Review* chapters. The main problem is scarcity of trade statistics and this is due in large part to lack of tariff classifications for most of the EWPs. However, good production statistics are available. "Apparent consumption" will be reported only for those products and countries where import and export data are also available. Reliable consumption data exists for glulam in Europe, Japan, and North America, I-beams in North America and LVL in Japan and North America.

11.3.1 I-beams

Production and trade statistics

Consumption is essentially the same as production as international trade flows in I-joists are either non-existent or minimal. The only measurable trade flows are between the United States and Canada. I-joists are a North American product primarily due to prevalence in wood-frame construction in North America. In 1999, approximately 2 million m^3 of I-beams were produced worldwide with 95% produced and consumed in North America. I-joists now make up 40% of above ground, raised wood floors (excludes ground level concrete floor area) in the United States single family housing market and are expected to grow to as much as 80% market share in ten years.

The other major end use is for roof trusses, although market penetration to date has been lagging the success in the flooring market. New Zealand and Australia build wood-frame houses similar to North America. However, housing demand there is significantly less hence the lower production levels. Europe's primary use for I-joists is as support for concrete forming (flooring) applications. The European I-beams are characterized by an open-web lattice of solid timber in contrast to the North American product comprized of solid structural panel webs.

11.3.2 LVL

Production and trade statistics

LVL is similar to I-beams in that they are primarily produced and consumed in North America, although Japan is also a big consumer when structural and non-structural end uses are included (graph 11.1.1). North American end uses favour structural applications with the bulk consumed as flange material in I-joists (graph 11.3.1). In North America 95% of the LVL is from softwood species such as southern yellow pine and Douglas fir because of their good strength to weight ratios. There are also 3 hardwood-based plants using maple, oak and yellow poplar (tuliptree) in West Virginia and aspen and birch in Quebec.

TABLE 11.3.1

Production and trade of I-beams, 1995-1999

(1,000 m³)

	1995	1996	1997	1998	1999	Change 1998 to 1999	
						Volume	%
PRODUCTION							
Europe					105.0 [1]		
North America	833.7	1,045.8	1,316.7	1,493.1	1,879.5	386.4	+26
Canada	81.9	113.4	168.0	193.2	340.2	147.0	+76
United States	751.8	932.4	1,148.7	1,299.9	1,539.3	239.4	+18
EXPORTS							
North America	6.3	7.8	11.4	18.9	89.6	70.7	+374
Canada	4.0	5.0	8.0	15.0	85.0	70.0	+467
United States	2.3	2.8	3.4	3.9	4.6	0.7	+18
IMPORTS							
North America	4.0	5.0	8.0	15.0	85.0	70.0	+467
Canada	0	0	0	0	0	0.0	0
United States	4.0	5.0	8.0	15.0	85.0	70.0	+467

1 Estimated data.

Source: APA, 2000.

TABLE 11.3.2

Production and trade of LVL, 1995-1999

(1,000 m³)

	1995	1996	1997	1998	1999	Change 1998 to 1999	
						Volume	%
PRODUCTION							
WORLD	997.4	1,158.6	1,332.7	1,402.5	1,705.5	303.0	+22
Europe	85.0	85.0	88.0	93.0	93.0	-	0
Asia	119.5	167.4	126.6	91.9	100	8.1	+9
Japan [1]	119.5	167.4	126.6	91.9	100	8.1	+9
Malaysia & Indonesia			60		60		
Oceania			42.0		40		
North America	792.9	906.2	1076.1	1,217.6	1,472.5	254.9	+21
Canada [2]				56.6	113.3	56.7	+100
United States [2]				1,161.0	1,359.20	198.2	+17
EXPORTS [3]							
IMPORTS							
Asia							
Japan	41.7	76.4	60.3	67.4			
North America							
Canada	0	0	0	0	0	0	0
United States				22.3	24.5	2.2	+10

1 Japan LVL Association. Includes softwood and hardwood.

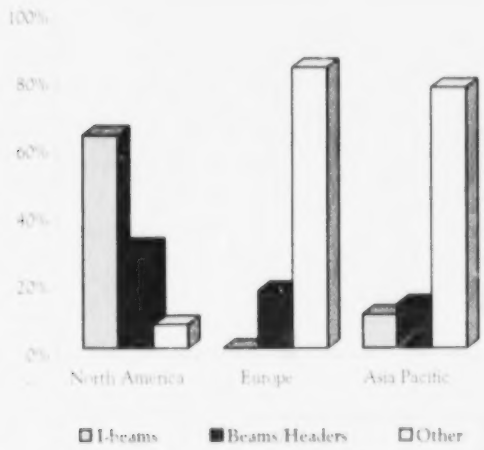
2 Combined to avoid disclosure 1995-1997.

3 Not available.

Source: APA, 2000.

GRAPH 11.3.1

LVL end uses by region



Sources: Japan LVL Association, 2000

End uses in Europe include commercial construction (engineered constructions) on the continent while residential construction dominates in the Nordic countries. Non-structural uses such as joinery and furniture applications are found in Europe and North America in small volumes.

In Japan non-structural uses are 77% of the market. Non-structural applications include fixtures and components, 51%, furniture, 7% and miscellaneous uses, 42% (Japan LVL Association). The Japanese LVL market is different in another important way in that it is manufactured from both hardwood and softwood fibre, much of which is imported. The hardwoods are tropical species from Indonesia primarily while softwoods come from North America, Russia, and the Nordic countries. Hardwood LVL normally is not as strong as softwood based LVL (strength/weight basis), hence hardwood LVL is used more in non-structural applications such as furniture. Softwood LVL in Japan is also used for crating and containers.

Trade in LVL is primarily to Japan mainly from New Zealand and the rest from North America. In 1999, Japan imported about 110,000 m^3 (Jaakko Poyry, 2000). The bulk of that came from New Zealand with North America supplying the rest. In 1999, Europe shipped 20,000 m3 to the United States while the United States sent about 10,000 m^3 to Europe.

Apparent Consumption.

Consumption patterns for LVL reflect differences in construction technology with structural applications dominating North America consumption while more decorative (structural and non-structural) uses are favoured elsewhere in the world.

TABLE 11.3.3

LVL Consumption, 1995-1999

(1,000 m^3)

	1995	*1996*	*1997*	*1998*	*1999*
North America	790*	900*	1,070*	1,191.2	1,438.1
Japan	161.0	244.0	187.0	159.0	

*Assuming negligible net trade.

Source: APA, 2000, including estimates.

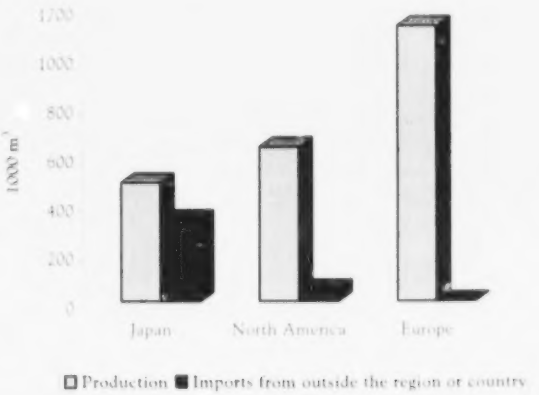
11.3.3. Glulams

Production and trade.

Glulam production is focused in three regions – Japan, North America, and Europe as seen in graph 11.3.2. Trade in glulam is primarily between Europe and Japan, and between North America and Japan. In 1999, Europe shipped 140,000 m^3 (12% of production) to Japan while North America shipped about 60,000 m^3 (8% of production). In addition, Russia shipped about 33,000 m^3 to Japan in 1999.

GRAPH 11.3.2

Regional glulam production and imports, 1999



Sources: APA, 2000; Japan Customs Bureau, 2000; and Jaakko Poyry, 2000.

Consumption.

Glulam is the most universally traded and consumed of all the EWP. Glulam is the one EWP that Europe consumes more of than North America and this trend is expected to continue. Germany is by far the largest consumer of glulam (graph 11.3.3).

TABLE 11.3.4

Production and trade of glulam, 1995-1999

(1,000 m³)

	1995	1996	1997	1998	1999	Change 1998-1999	
						Volume	%
PRODUCTION							
World	1,761.3	1,974.6	2,128.6	2,159.9	2,609.0	449.1	21
Europe [1]	855.0	870.0	992.5	1,035.7	1,300.0	264.3	26
Austria	108.0	119.0	133.5	160.0			
Denmark	55.0	53.0	54.0	48.0			
France	100.0	100.0	100.0	110.0			
Germany	350.0	360.0	460.0	510.0			
Italy	54.0	48.0	50.0	55.0			
Netherlands	15.0	15.0	15.0	7.0			
Norway	56.0	54.0	52.0	32.9			
Sweden	70.0	75.0	81.0	74.8			
Switzerland	47.0	46.0	47.0	38.0			
Russian Federation	0	0	0	38.0	41.0	3.0	8
Japan [2]	208.1	340.1	385.0	374.2	483.7	109.5	29
North America	698.2	764.5	751.1	712	784.3	72.3	10
Canada	30.7	30.7	35.4	30.7	35.4	4.7	15
United States/Mexico [4]	667.5	733.8	715.7	681.3	748.9	67.6	10
EXPORTS							
Europe [5]	35.9	68.1	137.9	72.0	175.9	103.9	144
Russian Federation	0	0	0	30.6	32.9	2.3	8
North America	149.5	233.5	213.9	121.3	143.4	22.1	18
Canada	29.5	56.7	102.4	72.5	88.3	15.8	22
United States/Mexico [3, 4, 7]	120.0	176.8	111.5	48.8	55.1	6.3	13
IMPORTS							
Japan [6]	164.1	350.6	342.7	188.9	335.0	146.1	77
Of which from: Canada	20.8	30.2	38.9	18.4	25.8	7.4	40
United States	81.2	123.1	121.4	32.5	44.8	12.3	38
New Zealand	12.9	12.0	14.4	13.7	18.3	4.6	34
Sweden	16.3	33.4	43.5	19.7	40.2	20.5	104
Finland	12.2	14.8	19.8	13.3	34.6	21.3	160
Germany	3.5	10.7	42.2	10.7	31.5	20.8	194
Austria	0.1	0.6	6.3	18.0	50.4	32.4	180
China	0.8	5.5	15.9	15.3	32.7	17.4	114
Russia	0	0	0	30.6	32.9	2.3	8
Other	16.3	122.3	40.3	16.7	23.8	7.1	43
United States	24.3	43.3	59.1	46.7	49.6	2.9	6

1 The European Glued Laminated Timber Industries Association.

2 Japan Laminators Association.

3 APA-The Engineered Wood Association. JLA import data used for United States exports and Japan imports since Japanese data are thought to be superior to the United States data collected from manufacturers.

4 Data from one glulam plant in Mexico added to United States to avoid disclosure.

5 Total European exports estimated by assuming that most of the volume went to Japan.

6 Japanese Custom Bureau, Ministry of Finance.

7 United States export data for 1997 smaller than Japan import data for the same year possibly due to shipment vs. arrival dates.

Source: APA, 2000.

TABLE 11.3.5

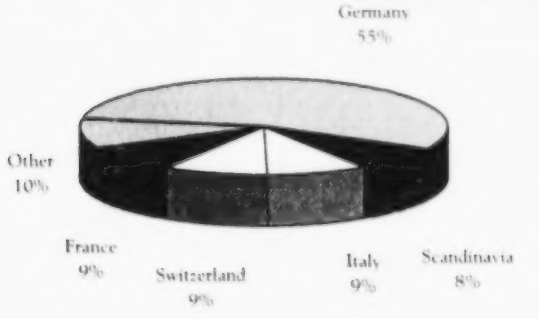
Apparent consumption of glulam, 1995-1999

	1995	1996	1997	1998	1999	Change 1998-1998	
						Volume	%
			(1,000 m³)				
EUROPE							
Production	855.0	870.0	992.0	1,036.0	1,300.0	+264	+25
Imports	0	0	0	0	0	0	0
Exports	36	68	138	72	176	+104	+144
Net trade	36	68	138	72	176	+104	+144
Apparent consumption	819.0	802.0	854.0	964.0	1,124.0	+160	+17
RUSSIAN FEDERATION							
Production	0	0	0	38	41	+3	+8
Exports	0	0	0	30.6	32.9	+2.3	+8
Apparent consumption	0.0	0.0	0.0	7.4	8.1	+0.7	+9
JAPAN							
Production	208	340	385	374	484.0	+110	+29
Imports	164.0	351.0	343.0	189.0	335.0	+146	+77
Apparent consumption	372.0	691.0	728.0	563.0	819.0	+256	+45
NORTH AMERICA							
Production	698	765	751	712.0	784	+72	+10
Imports	0	0	0	0	0	0	0
Exports	120	178	112	49	55	+6	+12
Net trade	120	178	112	49	55	+6	+12
Apparent consumption	578.0	587.0	639.0	663.0	729.0	+66	+10

Source: APA, 2000.

GRAPH 11.3.3

European glulam demand, 1999



Source: Ludi, Binon, 2000

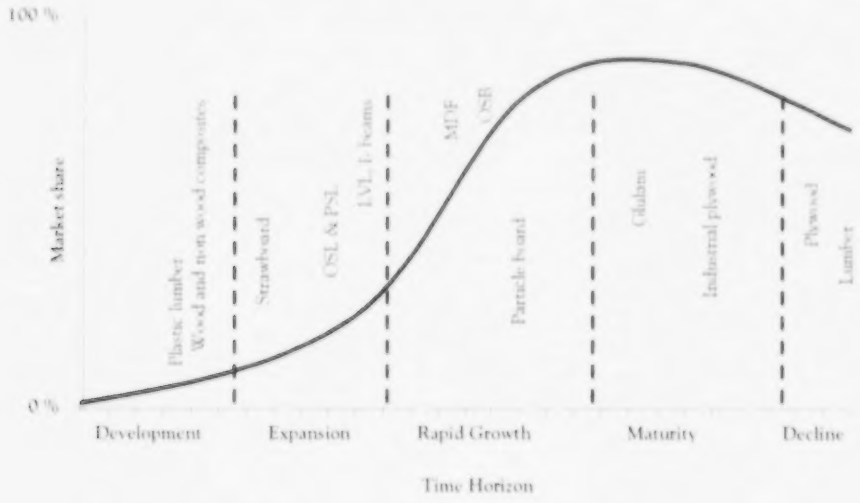
11.4 Outlook for EWPs

The outlook for EWPs is excellent with much of the impetus coming from the global need for efficient construction techniques, growing environmental concerns, and the universal requirement for affordable shelter. EWPs will continue to evolve and capture market share from maturing conventional building materials (graph 11.4.1). Product life cycles as depicted below are not uncommon – in fact they exist for all products. The only factor differentiating one product from another is the speed at which market share is gained or lost. Driving this evolution in EWPs are rapid technological developments in resin technology, press design, wafer geometry, drying systems, etc.

In addition, building codes all over the world have been switching to performance-based codes in lieu of the older "product-based" codes. Performance-based codes allow builders, architects, specifiers to take full advantage of the performance enhancing properties of EWPs. Due to the worldwide adoption of these codes, demand growth for EWPs escalates. These properties will help EWPs to compete "head on" with steel and concrete in the large non-residential building construction market.

GRAPH 11.4.1

EWP "Product Life Cycle"



And, because many EWPs are made from young, small diameter trees, the fibre input can be truly labeled as "renewable". In fact, some EWPs actually enhance forest management options by providing a market for lower quality fibre (both species and diameter). For example, Timberstrand ™ and some North American LVL is made from trees that previously had limited economic markets. By providing markets for a wider range of species and grades, harvesting costs are often reduced, and additional silvicultural operations become economic.

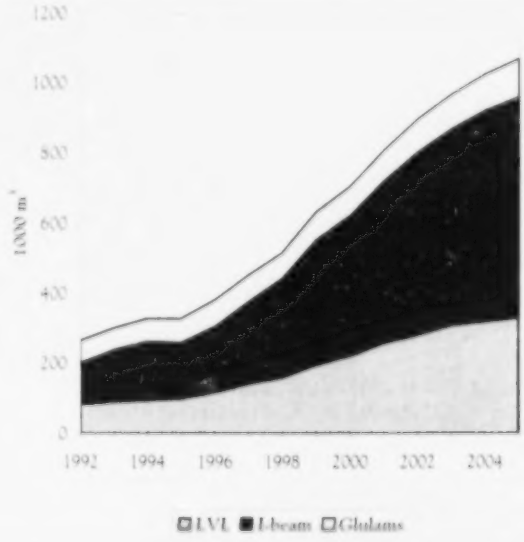
11.4.1 North America

The outlook for EWPs is encouraging as they continue to capture market share from conventional wood building materials. For example, I-joists now have over 40% of market share for raised wood floors, up from 20% in 1995 (APA, 2000). The number of EWPs plants in North America has doubled in the past decade according to APA statistics. EWPs production will have grown 150% between 1992 and 2000 (R. Taylor, 1999). Large increases in demand for LVL, I-joists, and glulam are projected over the next four to five years (APA, 2000) (graph 11.4.2).

Another aspect of EWPs is that the speed with which these products are being developed is increasing in response to changing needs in the market place.

GRAPH 11.4.2

Forecast EWPs growth in North America, 1992-2004



Source: APA, 2000.

Conventional wood products are losing appeal for a number of reasons:

- decreasing quality and performance as more younger and smaller trees are utilized;
- increasing costs;
- more demanding consumer; and
- tougher environmental regulations.

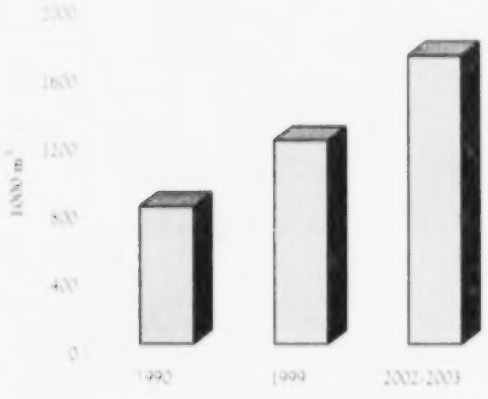
For all these reasons, EWPs are the product of the future as far as wood-based building materials are concerned. This is true whether referring to North America, Europe or Japan. Continuing evolution of all types of EWPs is expected.

11.4.2 Europe

Glulam production will continue to increase as timber frame construction gains in popularity (graph 11.4.3). This will help drive demand for glulam. Over 75% of production will continue to be exported to markets such as Japan. LVL and I-joists are expected to grow in response to growth in timber-frame construction.

GRAPH 11.4.3

Forecast growth of European glulam production, 1990-2003



Source: Jaakko Poyry, 2000

11.4.3 Japan

Japan will remain the major importer of EWPs in the world. EWP usage in Japan will grow as the residential construction industry continues to adopt new products for traditional post and beam housing and introduces panelized and platform frame construction technologies.

In addition to the slight economic recovery expected in Japan, another boost for EWPs is a discernible marketplace shift from quantity and price to quality and performance. The Housing Quality Assurance Law, implemented in 2000, requires Japanese builders to provide a ten-year warranty on all structural parts of a newly built home. This will favour dry sawnwood, stronger species, and further penetration of pre-cut packages, which in turn favour demand for EWPs. Revisions to the Japanese Building Standards Law implemented in June 2000 will direct a shift to performance standards, again favouring EWPs.

Deregulation of the Japanese housing sector has stimulated efforts to develop housing systems based on new building technologies and materials. Many of these new housing systems include LVL and glulam (*New Heavy Timber* magazine, 2000). In 1989, there were 15 new systems recognized and only one incorporated LVL or glulam. In 1998, 114 new systems were recognized with 57 incorporating LVL and or glulams.

11.4.4 South America

LVL production is expected to expand into this region over the next half decade. By 2005, an estimated production base of 300,000 m^3 per annum is expected to evolve. The majority of this volume will be exported to the United States.

11.5 Conclusions

This chapter presents an overview of the current status and near-term outlook for an exciting group of emerging wood products that are quickly capturing market share from conventional products. Worldwide variances in consumption trends reflect differences in building construction techniques throughout the world with residential applications prevalent in North America and Scandinavia; commercial and non-residential markets in Europe; and a mixture of residential and commercial end uses in Japan. The outlook for EWPs is excellent as they represent the future of structural wood building materials, particularly residential construction in North America. Although reasonably good statistics on regional production by country are available, there is less data on international trade flows. The main problem seems to be lack of tariff classifications for I-joist and LVL trade into and out the United States. Japan has excellent statistics on LVL imports. Glulam trade statistics are the exception – they are excellent

Industry structure is concentrated, and becoming more so, which is consistent with conventional wood products, such as pulp and paper. One United States company, Trus Joist MacMillan, recently acquired by Weyerhaeuser, produces approximately half the LVL and I-beams produced in the United States. In Europe, most of the I-beams are produced by a few producers in Austria

while most of the LVL is produced by Finnforest. Glulam production is the one EWP without the heavy concentration exhibited by other EWPs.

EWPs have two major efficiency or cost reduction advantages over conventional wood products that will enhance their continued growth:

- End use applications – superior technical properties (uniform strength) enhance design values that use less wood thus facilitating installation efficiencies (both labour savings and material reductions); and
- Conversion efficiencies, i.e. final product yield from the tree are significantly higher than lumber recoveries. The end result is that EWPs are competitive on an "installed cost basis" and they help us extend the valuable forest resource.

Engineered wood products are the future of wood building materials because they offer the best hope for incorporating technological change (resin technology, flaking machines, press technology, etc.) to ensure that forest products are cost competitive on an installed cost basis with all alternative building materials.

Chapter 12
Paper, Paperboard and Woodpulp – Production, Consumption and Trade [1]

Highlights

- Since early 1999 and through the first half of 2000 both the European and North American pulp and paper sectors sustained a strong economic recovery.
- Recovery contrasted with relatively volatile markets from 1996 through 1998, and afforded producers the best market conditions since the previous market peak in 1995.
- The recovery is attributed to stable economic growth in North America and Europe, restrained growth in mill capacity, and an upturn in Asian and global markets.
- A modest but unprecedented historical decline in paper and paperboard production capacity of -0.5% occurred in the United States in 1999. The capacity utilization rate improved.
- Domestic purchases and consumption of paper and paperboard in both North America and Europe have continued in general to follow upward economic growth trends.
- Although United States markets displayed considerable price volatility from 1996 through 1998, the trend in United States domestic purchases of paper and paperboard was steadily upward.
- Consumption of paper and paperboard was steadily increasing in both Europe and North America in recent years, reaching record levels despite intermittent market volatility.
- The resurgence of Asian and Latin American economies placed increased demand pressures on global fibre supplies, particularly market pulp and recovered paper.
- Production and consumption of pulp have risen in both North America and Europe, but pulp's share of total fibre input continues to decline as use of recovered fibre continues to rise.
- Since early 1999, prices have generally increased for paper, paperboard, market pulp and recovered paper, along with improvements in capacity utilization rates.

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Secretariat introduction

This chapter was written by Dr. Peter Ince of the USDA Forest Service in a cooperative arrangement with the secretariat. Dr. Ince is responsible for most of the analysis, notably that concerning the capacity-production-price relationships in the United States, which represents a major improvement in the depth of the analysis in this part of the *Review*. The secretariat wishes to express its gratitude to Dr. Ince and the Forest Service, for their important contribution.

12.1 Introduction

Since early 1999 and through the first half of 2000 the pulp and paper sectors of both Europe and North America sustained an economic recovery, which afforded the best market conditions for producers since the previous global market peak around 1995. Record levels of production and consumption for paper and paperboard were achieved in both Europe and North America. The economic recovery in pulp, paper and paperboard markets was indicated by higher prices for market pulp, paper and paperboard, and improved industry profitability. The recovery was attributable to a combination of factors, including, on the demand side, generally stable economic growth in the domestic economies of North America and Europe, and an upturn in Asian and Latin American economies following the Asian economic decline of prior years. As in the past, strong economic activity has positively affected demand for paper and paperboard. On the supply side, there has been restrained growth in overall mill capacity, limiting the over-supply which has occurred in the past. As a result, prices for pulp and paper have been firm in 2000 and profitability has improved.

A number of key factors influenced economic changes within the European and North American pulp and paper sectors, including mergers, consolidation and departure from historical patterns of growth in production capacity, particularly in North America. Corporate mergers, consolidation and slower capacity growth were a reaction to earlier market volatility and variable profitability that occurred in the mid to late 1990s, especially in the period from late 1995 to early 1999. The market volatility of the late 1990s was generally associated with a build up of capacity and excess product inventories in 1996, followed by the economic decline in Asia in 1997 and 1998. Market volatility was influenced also by expanded globalization of markets and by more recent currency exchange rate adjustments (i.e. strong United States dollar versus euro and other currencies).

This chapter analyses and discusses recent trends in markets for paper and paperboard, along with trends in woodpulp. This discussion is connected to discussion of pulpwood market trends, which are explained in Chapter 7 in the context of overall trends in wood raw material use. The definition of paper and paperboard in the joint FAO/ECE/Eurostat/ITTO questionnaire (see annex) was changed this year, to bring it more in line with commercial realities and industry practice. This change has introduced some discontinuities in the data series, which the secretariat has endeavoured to identify and correct. However, it is likely that a few remain, for which the secretariat apologises.

12.2 Paper and paperboard

Apparent consumption of paper and paperboard in both Europe and North America has continued to follow upward economic growth trends, correlated with GDP for example. Paper and paperboard markets for European and North American producers were generally improving since the first quarter of 1999 and at least through the first half of the year 2000. Production of paper and paperboard increased in the United States, but United States producers were somewhat hampered by the exceptionally strong value of the United States dollar. The strong value of the dollar and the earlier Asian economic decline in 1997 and 1998 dampened United States exports of paper and paperboard, while United States imports increased. European producers also suffered a temporary setback in markets in late 1998, largely due to the effects of the Asian economic decline. In general however, apparent consumption of paper and paperboard was steadily increasing in both Europe and North America in recent years, reaching record levels in 1999 despite earlier periods of intermittent market volatility.

During 1999, consumption of paper and paperboard) increased by more than 3% in Europe and by over 5% in North America (table 12.2.1). In the United States alone, purchases (not exactly the same as statistics for apparent consumption) of primary paper and paperboard commodities reached a record level of 93.8 million m.t. in 1999, up from 89.8 million m.t. in 1998, according to the American Forest & Paper Association (AF&PA, Paper, Paperboard & Wood Pulp, *Monthly Statistical Summary*, various issues). The increase in domestic purchases of paper and paperboard of 4.5% in 1999 was closely in line with robust United States domestic GDP growth (at 4.1% in 1999). Apparent consumption of paper and paperboard in the United States and Canada reached a record level of more than 100 million m.t. in 1999. European apparent consumption of paper and paperboard also reached a record level at approximately 85 million m.t. in 1999, up from 82 million m.t. in 1998. In the Russian Federation, consumption of paper and paperboard is reported to have risen strongly, by nearly 30%, although the per capita consumption is still well below that in Europe and North America.

TABLE 12.2.1

Consumption of paper and paperboard in Europe, the Russian Federation and North America, 1996-1999

(1,000 m.t.)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
EUROPE	73,463	79,211	82,470	85,322	2,852	3.5
of which:						
Germany	15,346	16,148	17,073	17,642	569	3.3
United Kingdom	11,374	11,906	11,413	11,870	457	4.0
France	9,130	9,772	10,743	10,844	101	0.9
Italy	8,187	9,590	9,592	10,236	644	6.7
Spain	5,407	5,661	6,021	6,377	356	5.9
Netherlands	3,348	3,493	3,894	4,434	541	13.9
Austria	1,298	2,032	1,985	2,136	151	7.6
Belgium-Luxembourg	1,951	2,338	2,736	2,858	121	4.4
Poland	1,692	1,992	2,088	2,250	162	7.8
Turkey	1,768	2,009	2,075	2,144	69	3.3
Finland	2,276	2,220	2,027	2,044	18	0.9
Other countries	13,964	14,270	14,850	14,533	-318	-2.1
RUSSIAN FEDERATION	2,212	2,353	2,128	2,751	623	29.3
Canada	6,733	6,515	6,722	7,961	1,239	18.4
United States	84,875	79,791	91,611	95,829	4,218	4.6
NORTH AMERICA	91,608	86,306	98,332	103,789	5,457	5.5

Source: ECE/FAO TIMBER database, 2000.

Table 12.2.2 displays recent paper and paperboard production data for Europe, the Russian Federation and North America (United States and Canada).

In 1999, European production of paper and paperboard rose by 2.3%, to just over 90 million m.t. In general, all major sectors of the European pulp and paper industry experienced growth in production. Production of all grades rose (except the residual "other paper and paperboard" which refers to a much smaller group of products than in previous years). Production of graphic papers increased by 2.3%. French graphic paper production grew at an above average rate, and the market leaders, Finland and Germany, slightly below average. Within graphic papers, woodfree grades achieved better gains than mechanicals, and coated grades performed somewhat better than uncoated grades.

European production of packaging materials, whose volume is equivalent to about 80% of that of graphic papers, also rose, roughly in line with GDP at just over 2%, faster in the largest producer, Germany (+3.1%). This reflected the general level of manufacturing activity, which creates demand for packaging.

Production of sanitary and household papers, a sector which has not shown very fast long-term growth in the past, increased by 4.5% to 5.7 million m.t., with above average growth in Italy (+7.3%) and the United Kingdom (+13.1%).

According to the Confederation of European Paper Industries (CEPI, *Preliminary Statistics 1999*, February 2000), the last two years of the 1990s proved to be mirror images of one another in terms of the performance of European pulp and paper companies. (These more detailed trends are not apparent from the annual data in the tables.) According to CEPI, the year 1998 began with record output figures but by mid year a decline had set in which carried through into early 1999. However, the decline was arrested during the first quarter of 1999 and completely reversed by the end of 1999.

It is estimated that European paper and paperboard producers maintained an annual capacity utilization rate of approximately 95% in both 1998 and 1999. The record level of output ensured that European producers more than maintained their share of global paper and board output.

The slowing of growth, which occurred in the main European economies toward the end of 1998, led to a temporary depression in paper and paperboard markets and caused prices to decrease from the third quarter of 1998 into the first quarter of 1999. Depending on grades and countries, price declines were within a range of -5% to -15% according to press surveys. These declines seem

TABLE 12.2.2

Production of paper and paperboard in Europe, the Russian Federation and North America, 1996-1999

(1,000 m.t.)

	1996	1997	1998	1999	Change 1998 to 1999	
					Volume	%
GRAPHIC PAPERS						
EUROPE	38,329	42,443	43,601	44,604	1,003	2.3
Finland	7,341	8,591	9,243	9,392	149	1.6
Germany	7,274	8,008	8,260	8,400	140	1.7
Sweden	4,453	4,870	5,023	5,125	102	2.0
France	3,924	4,259	4,024	4,200	176	4.4
Italy	2,840	2,931	2,968	3,069	101	3.4
Other countries	12,497	13,784	14,083	14,418	335	2.4
RUSSIAN FEDERATION	1,678	1,639	1,869	2,189	320	17.1
Canada	13,714	14,171	13,736	14,895	1,159	8.4
United States	28,856	30,872	29,221	29,732	512	1.8
NORTH AMERICA	42,570	45,043	42,957	44,627	1,671	3.9
SANITARY AND HOUSEHOLD PAPERS						
EUROPE	4,675	5,440	5,484	5,729	245	4.5
Italy	548	1,026	1,102	1,182	80	7.3
Germany	886	890	931	954	23	2.5
United Kingdom	586	639	635	718	83	13.1
France	508	534	514	520	6	1.1
Spain	284	329	393	416	23	5.9
Other countries	1,863	2,022	1,909	1,939	30	1.6
RUSSIAN FEDERATION	82	93	94	100	6	6.4
Canada	605	617	624	661	37	5.9
United States	5,681	5,831	5,973	6,210	238	4.0
NORTH AMERICA	6,286	6,448	6,597	6,871	275	4.2
PACKAGING MATERIALS						
EUROPE	32,520	34,642	35,346	36,222	876	2.5
Germany	5,562	5,953	5,983	6,218	235	3.9
Sweden	4,246	4,447	4,429	4,527	98	2.2
France	3,842	4,074	4,347	4,500	153	3.5
Italy	3,207	3,702	3,812	3,945	133	3.5
Finland	2,667	2,895	2,869	2,970	101	3.5
Other countries	12,996	13,571	13,906	14,062	157	1.1
RUSSIAN FEDERATION	1,046	1,199	1,242	1,605	363	29.2
Canada	4,105	4,181	4,365	4,591	226	5.2
United States	40,735	42,037	43,338	44,640	1,302	3.0
NORTH AMERICA	44,840	46,218	47,703	49,231	1,528	3.2
OTHER PAPER AND PAPERBOARD						
EUROPE	3,554	3,735	4,185	4,108	-78	-1.9
Germany	1,011	1,102	1,137	1,170	33	2.9
United Kingdom	361	415	464	515	51	11.0
Spain	302	302	366	423	57	15.6
Finland	423	459	420	400	-20	-4.8
Italy	359	373	373	373	0	-0.1
Other countries	1,098	1,084	1,426	1,227	-198	-13.9
RUSSIAN FEDERATION	418	411	390	574	184	47.2
United States	3,983	4,065	4,189	4,295	275	3.8
NORTH AMERICA	3,983	4,065	4,189	4,295	275	3.8

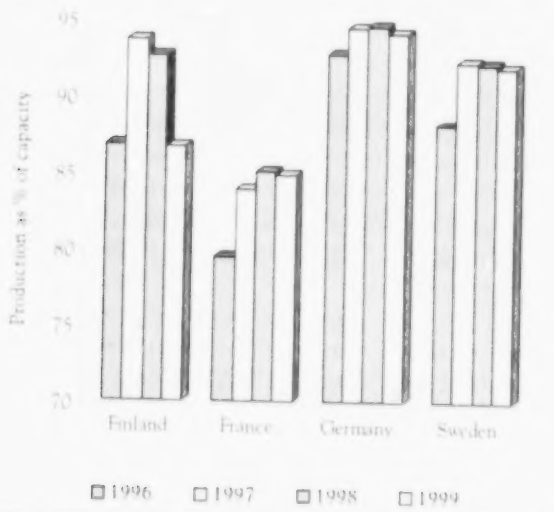
Source: ECE/FAO TIMBER database, 2000.

to have stopped during the second quarter of 1999, and a gradual market recovery was sustained well into the year 2000. With a positive outlook for European GDP growth and stabilization of the international environment, a robust and healthy year was expected for the European paper and paperboard industry, according to CEPI.

While market conditions inside Europe improved during 1999, exports outside the region suffered, particularly during the first half of the year. Expectations are that future export demands will be underpinned by the relatively low foreign exchange value of the euro in trade-weighted terms. Indeed, exports outside of the region began to show improvement late in 1999.

GRAPH 12.2.1

Capacity utilization rates for paper and paperboard in some European countries, 1996-1999



Sources: ECE/FAO TIMBER database, 2000; and FAO, 2000.

Graph 12.2.1 illustrates recent trends in capacity utilization rates (i.e. production as a percentage of the capacity reported to FAO) for paper and paperboard in four major European paper producing countries. Capacity utilization in 1998 and 1999 stabilized over 90% in Germany and Sweden and increased, from a lower level, in France. In Finland however, it fell, although this may be due to problems with the data as companies reported generally satisfactory operating rates in 1999. To analyse the interaction between capacity, production and profitability, it is necessary to have monthly data which are not available to the secretariat for Europe. For a more detailed analysis of this inter-relationship, see the section on the United States below.

In the United States, production of paper and paperboard increased in 1999 by 3.6%, rather less than the increase in United States apparent consumption (up 4.6% in 1999) or purchases of paper and paperboard (up 4.5% in 1999). The divergence between production and consumption of paper and paperboard in the United States reflects the widening United States trade deficit in paper and paperboard since 1997, with increased imports and decreased exports. In 1999, nearly half of the increase in domestic consumption of paper and paperboard was provided by increased imports (mostly from Canada, but also from Asia and Europe). The relatively high trade-weighted value of the United States dollar continued to dampen United States exports and provided an economic incentive for the high level of United States imports.

In 1999-2000 the exchange rate of the United States dollar rose and the overall United States trade deficit climbed to record levels. The trade deficit (all products, not just paper and paperboard) reached an all-time record of 30.2 billion dollars per month in March 2000. Graph 12.2.2 illustrates the apparent negative relationship between the overall United States trade deficit (United States Department of Commerce current accounts trade balance) and a trade-weighted United States dollar index (J. P. Morgan trade-weighted broad index).

GRAPH 12.2.2

United States monthly trade-weighted dollar index and monthly United States trade deficit, 1996-2000

Sources: J.P. Morgan, 2000; and United States Department of Commerce, 2000.

The United States trade deficit in paper and paperboard commodities also widened significantly in recent years: the tonnage difference between United States imports and United States exports has more than doubled since 1997. In 1999, United States exports were 8.6 million m.t., down from 9.0 million m.t. in 1998, while United States imports increased from 14.1 million m.t. to 15.3 million m.t. (AF&PA estimates). The widened United States trade deficit in paper and paperboard was attributable in part to the Asian economic decline in the period from 1997 to 1998, and also to the exceptionally strong value of the United States dollar.

It is interesting to examine briefly the developments for production (or shipments), prices, capacity and profitability in the paper and paperboard sector, using the United States as an example. As will be shown, the relationships between these parameters are complex, but crucial for the economic health and sustainability of the sector.

There was a divergence between paper and paperboard market trends and general economic trends, particularly in the United States where paper and paperboard market trends and industry profitability diverged at times from more robust domestic GDP growth trends. As shown in graph 12.2.3, trends in prices (monthly average United States price index for paper and paperboard), were very different from those for consumption (monthly United States purchases of paper and paperboard). In the late 1990s, United States domestic purchases continued an upward trend in association with growth in United States GDP, but market prices were much more volatile. United States paper and paperboard prices experienced a "double-dip", with a notable drop in prices in 1996, and a more prolonged period of weakness in 1997 and 1998 (associated with the Asian economic decline).

GRAPH 12.2.3

United States monthly average price index and domestic purchases of paper and paperboard, 1996-2000

Sources: AF&PA, 2000; and United States Bureau of Labor Statistics, 2000.

The volatility in prices apparent from graph 12.2.3 caused considerable variability in industry profitability, with notable industry-wide declines in profitability in 1996 and again in 1997 to 1998 (United States Department of Commerce, *Quarterly Financial Report*). As markets improved and prices increased from early 1999, industry-wide profits also improved, although prices and industry-wide profits remained below 1995 peak levels through the fourth quarter of 1999. Based on United States corporate reports, industry profitability continues to show signs of improvement into the year 2000. Nevertheless, market volatility and the experience of reduced profitability in the period from 1996 to 1998 contributed to an ongoing trend toward industry consolidation and reduced capacity growth. Mergers were negotiated among a number of large United States (and Canadian) firms, and in many cases the consolidations were associated with reductions in mill capacity through closure of existing mills. In general, the United States industry experienced a considerable slowdown, even reversal, of capacity growth relative to previous historical trends.

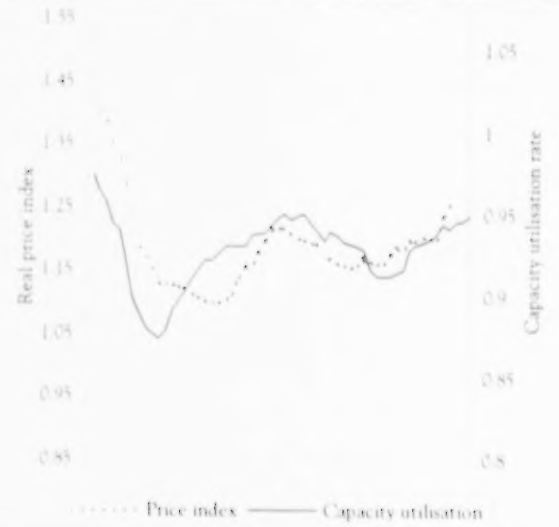
As a result, an unprecedented, although modest, historical decline in paper and paperboard production capacity of -0.5% occurred in the United States in 1999 as a result of mill closures and limited capacity expansion. This was the first reported decline in United States paper and paperboard capacity over the more than 40 years in which industry capacity data have been compiled, and it stands in contrast to an average annual capacity growth rate of about 2.5% over the preceding 20 years, according to the annual capacity survey of the AF&PA. In 2000, slow capacity growth is expected to continue: United States paper and paperboard capacity is expected to grow by only around 1%, according to AF&PA. Capacity growth decelerated also in Canada, to 1.7% in 1999 and is projected to be just 0.9% in the year 2000, according to the Pulp and Paper Products Council of Canada. (Increasingly in many cases, capacity decisions are taken by United States-Canadian or North American-European companies, applying a global, not national, strategy)

How to explain the apparent contradiction between rising purchases and variable, often low, prices and profitability? Developments in capacity, specifically the

capacity utilization ratio, explain price/profitability trends quite well. The capacity utilization ratio (the ratio of actual production to available mill capacity) is an approximate indicator of the balance between market demand and short-run market supply. The numerator of the ratio, actual production, is an approximate indicator of product demand. The denominator of the ratio, available mill capacity, is an indicator of short-run market supply. Price trends are usually positively correlated with trends in capacity utilization, which is often a leading indicator of pulp and paper markets and profitability. Graph 12.2.4 shows for the United States the correlation in recent years between the inflation-adjusted United States average paper and paperboard price index and the United States capacity utilization ratio for paper and paperboard (displayed with a 6-month moving average for capacity and a 4-month lag in prices).

GRAPH 12.2.4

United States price index and capacity utilization rates for paper and paperboard, 1996-2000



Sources: AF&PA, 2000; and United States Bureau of Labor Statistics, 2000.

Graph 12.2.4 shows the clear correlation, for the United States, between the price for paper and paperboard and the capacity utilization rate. The reduction in capacity in North America in 1999, at a time of rising production and consumption played a major role in raising the capacity utilization rate and thus strengthening prices and improving industry profitability.

This development is also linked to the trend towards mergers and acquisitions of major forest products companies, to form truly global players. One reason for this trend is to form "global companies for global markets", increasing marketing strengths and finding economies of scale in distribution. However, another important factor is the desire to bring capacity into a satisfactory relationship with demand, which involves maintaining or expanding the most efficient units and closing those whose operating costs are too high compared to the global industry average. Taking these difficult decisions is easier in the context of a very large company with several units for each grade, than in a smaller company where closure of one mill could mean leaving a complete sector or even winding up the company.

GRAPH 12.2.5

United States exports and capacity utilization for paper and paperboard, 1996-2000

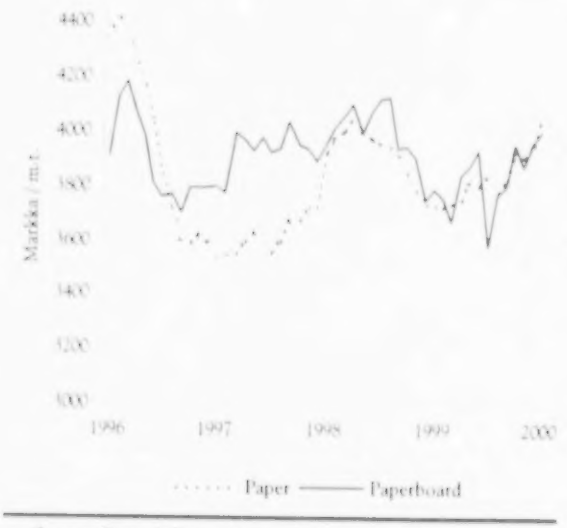
Sources: AF&PA, 2000; and United States Department of Commerce, 2000.

The interaction between capacity utilization rate and product price almost certainly exists also in Europe and other regions. However, at present, the secretariat does not dispose of sufficiently detailed statistical series to replicate the above discussion, prepared by Dr. Peter Ince, of this relationship in the United States. It is hoped to return to this question in future years. It is however worth noting that the trends for prices of paper and paperboard in Finland, shown in graph 12.2.6, are very similar to those for the United States in graph 12.2.3. This similarity is, of course, to be expected in a global industry which the paper industry has become over the past decade.

In the United States, during the late 1990s capacity utilization itself became highly correlated with trends in exports as shown by the monthly trends in graph 12.2.5. This correlation seems difficult to explain at first sight given the fact that United States exports are relatively minor compared to production for the huge domestic market. However, it is the outcome of increased globalization of United States markets and increased volatility of United States trade and export markets during the late 1990s. Thus, even though paper and paperboard exports represent only a small fraction of United States production, United States domestic market conditions have become strongly influenced by the volatile trends in exports.

GRAPH 12.2.6

Finnish export prices for paper and paperboard, 1996-2000



Source: Finnish Forest Research Institute, 2000.

The strong correlation, evident in the mid 1990s between United States paper and paperboard capacity utilization and exports, may however be waning, as the trends appear to diverge from early 1999. This divergence appears to be the result of reductions in mill capacity or mill closures in 1999, as reductions in mill capacity will tend to boost the capacity utilization rate regardless of export market trends. Faced with relatively weak export market conditions through 1999 (largely a result of the strong United States dollar) United States producers appear to have decided to concentrate on achieving a satisfactory utilization rate, rather than seeking to expand share of export markets (possibly at the cost of profitability). Thus, as shown above, the United States capacity utilization rate was increased from a low of around 90% in early 1999 to levels above 95% by the second quarter of the year 2000, while the trade deficit widened.

According to the Canadian Pulp and Paper Association (CPPA), Asia's gradual economic recovery had a palliative effect on the Canadian pulp and paper sector in 1999. Furthermore, Canadian paper and paperboard producers were leading beneficiaries of the strong United States dollar and declining United States trade balance in paper and paperboard, with United States paper and paperboard imports from Canada increasing substantially in 1999. CPPA reports that overall Canadian pulp, paper and paperboard exports were up substantially for every major market except for Japan and Latin America, for which Canadian exports both dropped by about 4% . Shipments to the United States – always Canada's largest customer – increased by a robust 9% in 1999. In 1999, exports to the United States accounted for 52% of all Canadian pulp and paper shipments, while shipments to Asia were 15%, shipments to Europe were 12%, shipments to other world regions were 4%, and shipments to the Canadian domestic market were 16%. For the first time in history, the total Canadian pulp, paper and paperboard export shipments to the United States exceeded 16 million m.t. Canada exported more of virtually every product grade to the United States in 1999. Canadian markets in Asia were broadened as pulp and paper exports to Asia excluding China and Japan rose by 25%. Overall capacity utilization for pulp and paper in Canada rose from less than 88% in 1998 to approximately 95% in 1999 according to CPPA, indicating a strong upward momentum in overall demand relative to short-run supply for paper and paperboard in Canada.

Russian production of paper and paperboard also rose strongly, by a quarter, to reach 4.5 million m.t. of which 1.7 million m.t. (38%) were exported. This is a further sign of the beginnings of a recovery in the Russian forest products sector in 1999, and of the important role that exports play in this recovery.

12.3 Demand and supply of woodpulp and other fibre

In conjunction with record levels of paper and paperboard production and consumption, woodpulp production and paper recycling rates were at relatively high levels in both Europe and North America in 1999. Production of woodpulp (table 12.3.1) did not increase as much as paper or paperboard production, largely because of continued gains in rates of paper recycling. Nevertheless, since early 1999 and well into the second quarter of 2000, prices for market pulp and recovered

paper have been trending upward in both Europe and North America. The upswing in fibre markets was attributable in part to the upward trends in European and North American paper and paperboard production, but also attributable to a notable increase in global fibre demand.

Global fibre demand turned upward in 1999 in conjunction with economic recovery in the economies of Asia and Latin America. A number of new paper and paperboard mills began operation recently in Asia, and more are scheduled to begin operation in the near future (particularly in China). Included among the new Asian mills are some of the largest and fastest paper machines in the world, such as the two large paper machines at the Gold East complex in Dagang, China, which began operation in 1999 and set a new world record for paper machine speed (PPI, February 2000). Many of the new mills are operating on the basis of imported market pulp

TABLE 12.3.1

Production of woodpulp in Europe, the Russian Federation and North America, 1996-1999

(1,000 m.t.)

	1996	*1997*	*1998*	*1999*	*Change 1998 to 1999*	
					Volume	*%*
MECHANICAL WOODPULP						
EUROPE	11,744	13,173	13,486	13,234	-251	-1.9
of which:						
Finland	3,489	4,469	4,637	4,602	-35	-0.8
Sweden	2,753	2,959	3,026	3,029	3	0.1
Norway	1,502	1,534	1,664	1,644	-20	-1.2
Germany	1,133	1,220	1,191	1,192	1	0.1
France	757	845	762	760	-2	-0.2
Other countries	2,110	2,146	2,206	2,007	-199	-9.0
RUSSIAN FEDERATION	976	899	981	1,160	179	18.2
Canada	10,973	11,354	10,481	11,213	732	7.0
United States	5,918	5,401	5,291	5,110	-181	-3.4
NORTH AMERICA	16,891	16,755	15,772	16,323	551	3.5
CHEMICAL WOODPULP [a]						
EUROPE	23,983	26,055	26,367	26,864	497	1.9
of which:						
Sweden	7,413	7,857	7,842	7,983	141	1.8
Finland	6,296	7,241	7,339	7,608	269	3.7
France	1,762	1,985	1,913	2,000	87	4.5
Portugal	1,595	1,703	1,708	1,755	47	2.8
Spain	1,409	1,546	1,545	1,618	73	4.8
Austria	1,206	1,251	1,274	1,319	45	3.5
Poland	820	828	856	825	-31	-3.6
Norway	840	900	829	782	-47	-5.7
Germany	719	763	782	715	-67	-8.6
Czech Republic	412	453	490	504	14	2.9
Slovakia	246	181	339	374	35	10.3
Other countries	1,265	1,347	1,450	1,381	-69	-4.8
RUSSIAN FEDERATION	2,841	2,851	3,010	3,922	912	30.3
Canada	13,625	13,795	13,363	14,400	1,037	7.8
United States	54,413	54,964	54,233	53,261	-972	-1.8
NORTH AMERICA	68,038	68,759	67,596	67,661	65	0.1

[a] Including semi-chemical woodpulp and dissolving grades.

Source: ECE/FAO TIMBER database, 2000.

(in the case of paper mills) or on the basis of recycled fibre (often imported fibre in the case of paperboard mills). Among new Asian mills are several new linerboard mills in China that will use recycled fibre, including imported old corrugated containers. Although much of the imported market pulp for Asian mills comes from sources in Asia, such as from pulp mills in Indonesia, growing fibre demands in Asia and Latin America have placed new demand pressures on global fibre markets. Producers of paper or paperboard in Asia and Latin America have also obtained market pulp and recovered paper directly from North American and Europe in some cases (PPI).

European pulp production rose very slightly (+0.5%) to reach 40 million m.t. Production of mechanical pulp fell by nearly 2%, with decreases around 1% in Finland and Norway. At least in the former country, this was part of a long term strategy to move towards the industry's perceived strengths, which are seen as being in wood free papers, based on chemical pulp. Chemical pulp production in Europe rose by less than 2%, with faster growth in France and Spain and declines in Poland, Norway and Germany.

The slower growth of pulp production in Europe than of production of paper and paperboard is attributable to increased pulp imports from other regions, but also to the continuing growth in importance of recovered fibre.

The world market price for pulp remained stable from early 1996 to mid 1999, at about $460 to 580 (per ton of Northern Bleached Softwood Kraft (NBSK) – the benchmark grade). This period of relative stability followed the severe price peak in 1995 to 1996 when the price first rose to nearly $1000, then fell to about $450 in a few months. However in mid 1999, demand strengthened after the Asian crisis, capacity growth slowed and stocks (inventories) were brought down. By May 2000, NORSCAN (North American and Scandinavian) stocks of market pulp were only slightly over 1 million m.t., a very low level in historical terms. As a result pulp prices rose. In July 2000, market pulp prices were around $700. However the cost of pulp to buyers outside the dollar area is also influenced by exchange rates, notably the euro's fall against the dollar. Thus pulp costs for European buyers are beginning to approach the levels experienced in 1995, with the combined effect of the rise in pulp prices and the fall in the euro. As Europe is perhaps the pivotal part of the global pulp market, this could exert downward pressure on the pulp price in the future.

According to data from CEPI, European paper and paperboard products on average contain 85.5% fibrous material, mostly wood fibre (including 45.0% virgin pulp, 39.8% recycled fibre from recycled paper, and 0.7% other pulp fibre) and also 14.5% non-fibrous materials (mainly clay coatings and pigments). The recovery of paper for recycling in western Europe reached 49.4% of total paper and paperboard consumption in 1998 according to estimates for CEPI member countries.

In the United States, production of woodpulp also declined in 1999, by 2.0% between 1998 and 1999, dropping from 59.5 million m.t. to 58.4 million m.t., as United States imports of pulp increased from 5.4 to 6.0 million m.t. and exports dropped from 5.0 to 4.9 million m.t. The net supply of woodpulp for domestic paper and paperboard production dropped by less than 1% from 59.9 to 59.5 million m.t. Recovery of paper for recycling in the United States increased by 2.1 million m.t., reaching a record level of 42.9 million m.t. according to AF&PA. The United States recovery rate increased to 45.0% from 44.5% according to AF&PA. The upswing in fibre markets is illustrated by trends in average price indexes for market pulp and recovered paper in the United States, as shown in graph 12.3.1.

GRAPH 12.3.1

United States average price indices for market pulp and recovered paper, 1994-2000

Source: United States Bureau of Labor Statistics, 2000.

Chapter 13
Certified Forest Products Marketplace

Highlights

- Potential supply of certified forest products is growing faster than market demand.
- Market demand for certified forest products continues to be more from retailers and not final consumers.
- The Timber Committee believes certification currently has value as a communication and marketing tool, in addition to its primary objective of encouraging sustainable forest management.
- Thus far, most certified forests are in the ECE region – only 8% are in the tropics.
- The new Pan-European Forest Certification system is coming on stream and has the possibility of doubling the forest area certified in Europe within 2 years.
- Some forestlands are achieving multiple certifications and mutual recognition between certification schemes is being initiated.

13.1 Introduction

The analysis of certified forest products (CFPs) markets is a regular chapter now in the *Review*. An initial special chapter on the subject was included in 1998 and last year the first regular chapter was published. The Timber Committee expanded its market discussions to include this sector as it feels that CFPs are important, especially as the certification of sustainable forest management remains a topical issue at the beginning of the new millennium.

At the 1999 market discussions, the Committee saw value in certification as a communication tool to provide a channel of communication between the sector and the people outside of the sector. Delegates explained that certification is, among other things, a marketing tool and indeed some companies have found valuable, but sometimes not directly profitable, benefits from manufacturing CFPs or at least in environmentally-oriented marketing. Some delegations expressed concern that a multiplicity of certification schemes could actually harm the image of wood by confusing the consumer.

Information for this chapter came from a variety of sources, but does not come from country-supplied statistics to a formal questionnaire like the preceding chapters. Customs classifications do not make the distinction between CFPs and other products. Considerable information for this chapter came from a forthcoming *Geneva Timber and Forest Discussion Paper* entitled "Status of forest certification in the ECE region: Summer 2000 update". We are indebted to the authors of that *Discussion Paper*: Messrs. Eric Hansen (Oregon State University, United States), Keith Forsyth (VELUX A/S, United Kingdom) and Heikki Juslin (University of Helsinki, Finland). Other sources are listed in the text where they are referenced.

Some information for this chapter was gathered from the Internet. A new Market Information Service is on the Timber Committee web site and it includes

information and links about CFPs (www.unece.org/trade/timber/mis.htm).

13.2 What are CFPs?

Certified forest products bear labels demonstrating in a verifiable manner that they come from forests that meet standards for sustainable management. Consumers might find labels on furniture and wood products while manufacturers could verify the source of certified products from a system of chain of custody that precisely identifies the origin of the wood.

13.3 What are the objectives of certification?

Certification systems have two major components:

- A system to determine whether a particular forest area is managed in a sustainable way; and
- A system to verify that forest products are in forest produced from the specified forest area (chain of custody).

The overriding objective is to promote sustainable forest management by informing final consumers whether the product they are buying is from a sustainably managed forest. However, the interests and objectives of the various actors – forest owners, forest industries, wholesalers, retailers, managers of certification systems, certifying companies, consumers, governments – vary widely. Sometimes, they conflict. To be successful, a certification system must further the objectives of all actors, or at least be acceptable to them.

This chapter examines, first, demand for certified forest products (e.g. consumer attributes, volume available, distribution channels) and then supply (e.g. certification systems in place, area of certified forest).

13.4 Demand for CFPs

13.4.1 Why sell CFPs?

Despite the weak demand by consumers, some manufacturers are producing and some retailers are selling CFPs for other reasons than sheer economics. At the Timber Committee's September 1999 market discussion, Dr. Richard Vlosky (Louisiana State University, United States) stated that the "green premium" for producing and selling CFPs, may not be in terms of higher prices, but of an improved image of the producer or retailer.

It bears repeating, from a *Geneva Timber and Forest Discussion Paper*[1] by Drs. Eric Hansen (Oregon State University, United States) and Heikki Juslin (University of Helsinki, Finland), *The Status of Forest Certification in the ECE Region*, a passage about reasons, other than direct profit, for marketing CFPs:

- Access to new niche markets;
- Promotion of a company's "environmental" image and policy;
- Credibility in communication with customers; and
- Building strategic marketing networks.

It seems that the marketplace is changing rapidly for CFPs. Many manufacturers and forest owners (including governments) in the ECE region were resistant to certification initially, stating that they knew that their management was sustainable and the burden of certification would simply add an additional, non-retrievable cost. In the last few years, however, more forest managers and manufacturers have changed their opinions and now consider that certification may indeed have additional values, for example as a communication and marketing tool. Likewise many trade associations that are involved with CFPs through their members welcome the public relations opportunities of certification to promote wood as an environmentally-friendly, renewable resource.

Many (but not all) traditional forest sector actors in western Europe and North America, including forest owners, forest industries and state forest services, have ceased to see certification as a threat and a burden imposed by "outsiders" (environmental NGOs). Now they see it rather as an opportunity to check and improve their own practices against objective criteria and to demonstrate to consumers and NGOs that their practices do in fact constitute sustainable forest management.

Current market research shows a continued lack of awareness of environmental issues and certification. For example, sawmills on the West Coast of North America saw little environmental awareness in their most important customers (Seppälä, 2000)[2]. Nevertheless, respondents in the study did see good forest management as a source of competitive advantage.

In summary, at this early stage of evolution of the CFPs market, the direct revenue from price premiums by selling CFPs is not common. Many studies have been conducted that indicate consumers are willing to pay more for CFPs than equivalent un-labelled wood products. However, actual buyer behaviour does not always correspond to the stated intention and is naturally influenced by such factors as availability, price and quality. Nevertheless, some potential for price premiums exists in specific market niches. In short, the question of whether or not it is possible for sellers to get a premium for CFPs has not yet been fully tested in the market. If

[1] ECE/TIM/DP/14, 1999.

[2] Unpublished thesis by Mr. Jarno Seppälä, Forest Products Marketing Department, Oregon State University, United States, 2000.

such a premium could be created, there would remain the question of how it would be distributed between forest owners, producers, wholesalers and retailers.

13.4.2 Where are CFPs sold?

CFPs can be broken down into: 1. purchases by final consumers, e.g. at a furniture store; 2. industrial products for further manufacturing, e.g. sawn hardwood that goes into furniture purchased directly from producers or through agents and middlemen.

Like other markets, the market for CFPs is being affected by the development of the internet. Suppliers, buyers and providers of certification services are now able to provide information, develop business relationships and trade online. For instance, the North America-based Certified Forest Products Council currently provides an online service which enables potential buyers to search for suppliers of certified wood products. Later in 2000, they envision development of online trading in CFPs. On a relatively small scale, other online traders are currently successfully supplying customers with certified wood products via the internet. It is expected that as Internet-based marketing systems are developed, CFPs will find a place in them.

13.4.3 Main components of demand for certified forest products

Globally CFPs represent less than 1 % of the value of sales of forest products. However in some markets they have greater importance; for example, in the United Kingdom they are estimated to have a 20% share of the market for forest products, including wood and paper (Boilley, *Le Commerce du Bois*, June 2000). The strongest impetus comes from some retailers and wholesalers who are committed to selling wood produced according to certifiable sustainable management, rather than directly from final consumers. It appears that final consumer market demand is small and thus the situation is more of a supply-push than a demand-pull. Manufacturers have generally been concerned with sustainable sources of supply of wood raw materials to their factories and some now are heeding the call from some retailers to produce CFPs. From a pure marketing view, the key demand from the final purchaser is missing and will only be created through considerable public relations efforts to educate consumers about potential advantages of CFPs over non CFPs.

This section analyses separately demand from final consumers, from retail and industrial buyers and from manufacturers.

13.4.3.1 Consumer demand

There is little new information available on final consumers' preferences for CFPs. Some initial studies investigated the potential for achieving price premiums to cover the additional forest management and forest products manufacturing costs of certification. While the studies generally found a willingness to pay premiums, this could not be confirmed at the cash register. Environmental aspects of products in most cases are not regarded as being of key importance in purchases (*Sustainable Forest Management Certification*, by Rametsteiner, 2000). There has been continual erosion of wood products' market share in the following building products: windows, doors, facades, furniture, framing, etc. (*The Competitive Climate for Wood Products and Paper Packaging: the Factors Causing Substitution with Emphasis on Environmental Promotions*, by Burrows and Santness, 1999).

The importance of environmental considerations, as opposed to considerations of price, performance or fashion, in these developments is not clear. It could be that purchasers consider wood an environmentally-friendly raw material but do not take this into account in their decisions. Or perhaps they consider wood use to be hostile to the environment (encouraged in this belief by public relations work from competing materials) and are for that reason, reducing their purchases of forest products. If the first supposition is true, introduction of certification is unlikely to have much influence. If the second is true, certification could be the key to recovering lost market share.

13.4.3.2 Retailer demand

Heretofore termed "buyers' groups", The Global Forest and Trade Network established by the WWF is designed to create demand for CFPs. The name was changed to accept producers' groups, the first of which has been formed in Russia. Other producer groups are planned in other countries. Buyers' groups have been started in many countries in the ECE region and outside (table 13.4.1).

The first buyers' group, the 95+ Group in the United Kingdom, has had an undeniable impact on the development of and demand for certification. The Group is now made up of 94 companies and 11 local authorities. These companies make up nearly $6 billion in wood products sales. One of the reasons the Group has had such a significant impact on certification is that as a whole, they purchase and distribute wood products from 80 different countries, 28 of which are now supplying certified wood. To reach their long-term goal of 75% of trade of forest products in the United Kingdom, their membership will be expanded into other sectors such as

TABLE 13.4.1

ECE region members of the WWF Global Forest and Trade Network, 2000

	Group Name	*Founded*	*Members*
Austria	WWF Gruppe 98	1996	25
Belgium	Club 97	1994	41
Germany	Gruppe 98	1997	58
Switzerland	WWF Woodgroup	1997	20
Netherlands	Stichting Goed Hout!	1995	41
Finland, Sweden, Denmark, Norway	WWF Skog 2000	1998	32
Spain	WWF Grupo 2000	1998	13
United Kingdom	WWF 95+ Group	1991	102
North America	Certified Forest Products Council	1997	239
France	Club PROFORETS	1999	9
Russia	Association of Responsible Producers of Russia	2000	66
Ireland	Just Forests	2000	6

Source: WWF Forests for Life, 2000.

specifiers, construction, small businesses, producers, forest managers and supporters.

The year 2000 was to be a significant milestone for many of the early members of the 95+ Group. The goal was to be selling 100% certified products by the end of 1999 but at present approximately 9% of the Group's trade is certified. Originally the group was exclusively limited to Forestry Stewardship Council (FSC) certification, but as supplies of FSC-certified wood products do not yet equal the Group's demand, some members are open to sales of products certified by other systems, especially if there were mutual recognition between schemes (more detail in the *Discussion Paper*).

Environmental groups in North America have recently had significant success in steering companies away from old growth wood and toward certification. The world's largest chain of do-it-yourself stores, The Home Depot, announced that it would stop selling wood products from environmentally sensitive areas and give preference to certified wood. In response to the company's challenge, several of its competitors are following its example.

13.4.3.3 Manufacturing demand

At this time in most ECE countries there exists no domestic demand, either from consumers or from retailers, for CFPs. However there is growing demand from export-oriented manufacturers who target environmentally sensitive markets, for example the Netherlands and the United Kingdom. The same situation applies to many tropical timber producers and industry customers in North America have taken the interest in certification to a new level in that region. The demand from retailers is clearly making its way back to producers of primary and secondary producers. Questioned by their customers whether the wood sold is from sustainable forest management, some manufacturers have initiated chain-of-custody procedures to demonstrate that the wood they sell really comes from sustainably managed forests.

So far, the system that is clearly demanded in the European marketplace is FSC. As Pan-European Forest Certification system (PEFC) has only recently been constituted and the first countries' systems agreed in summer 2000, no PEFC-certified material is yet on sale.

13.5 Supply of CFPs

At this time in the early evolution of modern certification of sustainable forest management, as no statistics exist on the volume or value of certified wood coming out of ECE region forests, this section describes the area of forestland certified. There are a few international systems plus a number of systems operating in individual countries (these may or may not be "national" systems, i.e. established by national governments). The international schemes are the International Organization for Standardization (ISO), FSC and the PEFC. Since the inception of certification of sustainable forest management, considerable debate has surrounded the schemes' perceived advantages and disadvantages. They are often seen as being mutually exclusive, but this may not in fact be the case. Some forest managers are arranging for their management to be

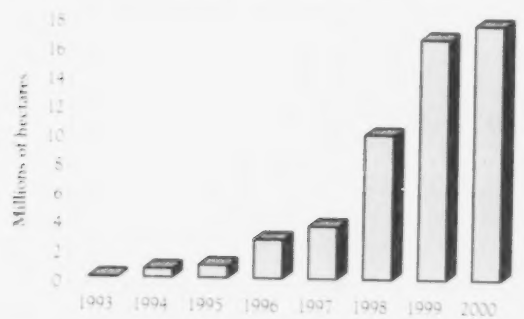
13.5.1 FSC

Since 1993 the area of FSC certified land has grown to approximately 17.6 million hectares as of June 2000 (FSC, 2000) (graph 13.5.1). This is approximately 1.4 million more than reported in last year's Review. Sweden dominates with approximately 9 million hectares, or over half of the total FSC certified land (graph 13.5.2). The number of chain of custody certificates was 735 in a total of 37 countries. Membership in FSC, which is divided into environmental, social and economic members, has climbed to 369 environmental non-governmental organizations, individuals, companies, university faculties, institutes, associations, etc. A total of 9 certifiers now have FSC accreditation and 7 await approval.

FSC has changed its percentage-based claims policy. The new policy allows lower percentages of FSC certified content in chip and fibre products. This new policy will be a challenge to follow through chain-of-custody. For assembled products to be certified by FSC, they must contain at least 70% of their volume in certified wood.

GRAPH 13.5.1

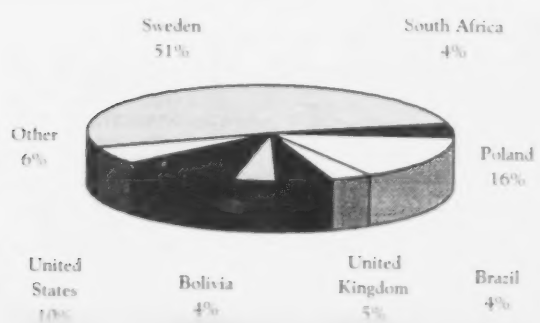
Area of FSC-certified forestland, 1993-2000



Source: FSC, 2000.

GRAPH 13.5.2

Distribution of FSC-certified forestland, 2000



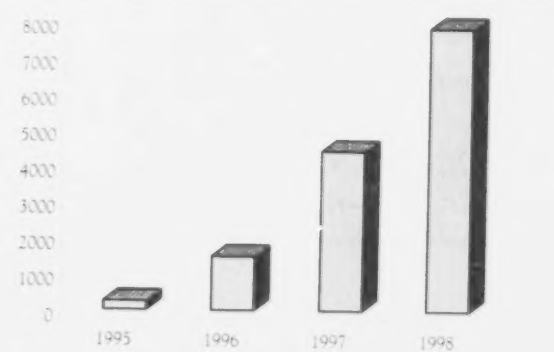
13.5.2 ISO

Not a certification scheme, but rather a set of internationally-recognized standards, the International Organization for Standardization has the ISO 14000 series of standards which the Organization has allowed to be used for certifying the environment management systems of forest and timber production operations.

Within the last year a number of companies in the forestry and wood products industry have obtained ISO 14001 Environmental Management System (EMS) certificates (graph 13.5.3). At the end of 1998, ISO records showed that a total of 7,887 ISO 14001 certificates had been issued, an increase of 78% when compared to the 1997 figure of 3,454. Of the total 7,887 certificates, 7,112 were classified into industrial sectors. Certificates issued to companies in the "Pulp, Paper and Paper Products" sector totalled 209, while certificates issued in the "Wood and Wood Products" sector totalled 34. It should be noted that ISO 14001 certifies the existence and performance of an environment management system, not the attainment of specified forest managed standards.

GRAPH 13.5.3

ISO 14001 environmental management system certificates, 1995-1998



Source: ISO, 1999.

13.5.3 PEFC

The PEFC Council was launched in June 1999 as a voluntary, private-sector initiative, to certify sustainable

The purpose of the PEFC scheme is to promote an internationally credible framework for the mutual recognition of forest certification schemes and initiatives in European countries (PEFC, 2000). Timber from certified forests that meet the PEFC criteria and requirements will have access to the PEFC logo.

Membership in PEFC is different than in FSC and currently consists of 14 national PEFC groups:

- PEFC Austria
- WoodNet asbl, Belgium
- The Council of the National Certification Centre – Czech Republic
- PEFC Denmark
- PEFC France
- Forest Certification Council, Finland
- German Certification Council
- PEFC Council of Ireland
- PEFC Latvia
- PEFC Norway
- Conselho Da Fileira Florestal Portuguesa, Portugal
- CEF (Certificación Española Forestal), Spain
- Swedish PEFC Interim Board
- PEFC Switzerland

As of June 2000 a number of the groups above had applied for acceptance under PEFC, and some forestlands may be certified under PEFC this year. However, because of the strong interest in many European private forest owners' associations and governments to have their forests certified under PEFC, the potential exists for the certified forestland in Europe to double within 2 years.

It is a common misconception that PEFC only works on certification issues in Europe. In reality, PEFC focuses on Europe but is potentially global in its coverage and has the possibility to endorse certification standards worldwide. PEFC is understood to have entered into discussions with some Canadian organizations with a view to possibly endorsing certification schemes in Canada.

13.5.4 SFI

The Sustainable Forestry Initiative (SFI) is a United States system run by the American Forest and Paper Association whose membership controls approximately 90 percent of the industrial forestland in the United States, or just over 23 million hectares. Acceptance of SFI is a condition for membership of AF&PA, the main United States industry association. In addition, licensees (non AF&PA members) such as state and county

with a new standard which includes five principles, eleven objectives and 37 performance measures. SFI has developed a third-party verification option for the system, which previously relied on self-certification and as of the end of 1999, approximately 20 million acres had been either committed to or completed the verification process. Many of the major corporate members have chosen to undergo verification.

SFI and the American Tree Farm System recently announced mutual recognition between the two systems. Lands certified through the American Tree Farm System amount to over 36 million hectares and represent a significant source of supply to many AF&PA companies.

SFI is planning upon becoming international through certification of forests according to its standards in Canada, Central and South America and other areas of the world (AF&PA, 2000).

13.5.5 CSA

Significant certification developments have taken place in Canada. The forestland certified under the Canadian Standards Association (CSA) Sustainable Forest Management System has more than doubled since May 1999 and in mid 2000 was approximately 480,000 hectares. This area is likely to increase with some of Canada's largest forestry and wood products companies – including Canfor, Interfor and Weyerhaeuser – aiming to achieve CSA certification (CSA 2000). Some companies have multiple certification standards accepted for the same forestland and CFPs.

However, the majority of certification work has been carried out according to ISO 14001 (table 13.5.1). In May 2000, ISO 14001 certificates had been issued to operations responsible for the management of almost 16 million hectares of forest, more than a six-fold increase when compared to May 1999.

TABLE 13.5.1

Certified forestland in Canada, 1999-2000

	Area covered (hectares)	
Standard	*May 1999*	*May 2000*
CSA	230,000	480,000
FSC	Not available	212,189
ISO 14001	2,550,000	15,960,000
Total	2,780,000	16,652,189

Sources: CSA 2000; and FSC 2000.

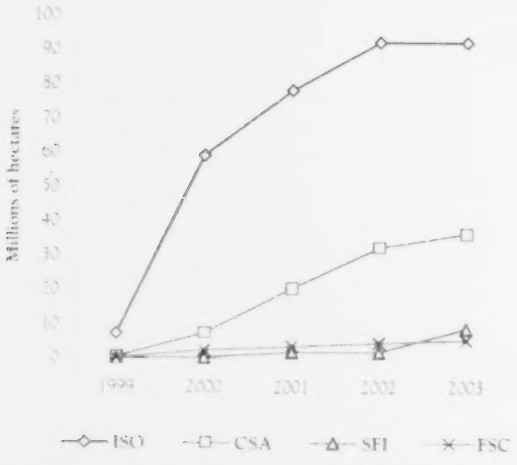
Approximately 75% of Canada's productive forestland

2000) (graph 13.2.4). According to companies' forecasts,

ISO 14001 will remain the dominant certification scheme used by forestry companies, followed by the CSA standard, the SFI and then the FSC standard. What the graph tends to hide is that there are several Canadian companies pursuing multiple certifications.

GRAPH 13.5.4

Potential certified forestland in Canada, 1999-2003



Source: Canadian Sustainable Forestry Certification Coalition, 2000.

TABLE 13.5.2

Summary of forest area certified in the ECE region

Country	*Hectares certified*	*Scheme*
United States	36.4 million	American Tree Farm System
	24.3 million	SFI
	1.8 million	FSC
Canada	15.7 million	ISO
	480,000	CSA
	22,000	FSC
Finland	13.5 million	Finnish Forest Certification System
Sweden	9 million	FSC
	1 million	Swedish PEFC
Norway	3.7 million	Living Forest/PEFC
Poland	2.7 million	FSC
Germany	1.5 million	German Forest Certification System
	120,000	FSC
United Kingdom	877,000	UKWAS/FSC
Denmark	36,000	FSC
Russian Federation	32,800	FSC
Ireland	11,000	FSC

Source: Forthcoming Status of Forest Certification in the ECE

13.5.6 Other schemes

It is beyond the scope of the Review to list all the schemes developing in the ECE region, however they are well documented in the forthcoming *Discussion Paper* on the "Status of forest certification in the ECE region: Summer 2000 update". The *Discussion Paper* lists the following situation in the ECE region as of the summer 2000 (table 13.5.2). It is important to note that the scene is changing rapidly.

13.6 Mutual recognition between schemes

Concern has been expressed in several fora about the multiplicity of certification schemes which could confuse consumers, harm the image of wood and possibly legitimate widely differing standards of forest management, thus negating the usefulness of the whole exercise. Retailers too are concerned about the problems which could arise from stocking simultaneously products certified to different systems. They are also concerned that not enough certified forest products are available to satisfy their marketing strategies. The United Nations Intergovernmental Forum on Forests urged "countries, international organizations, including WTO and other interested parties to undertake as appropriate, further cooperative work on voluntary certification and/or labelling schemes, in line with the recommendations of Intergovernmental Panel on Forests, while seeking to enhance their international comparability and considering their equivalence, taking into account the diversity of national and regional situations, and to ensure adequate transparency and non-discrimination in the design and operation of such schemes, and are consistent with international obligations, so as to promote sustainable forest management and not to lead to unjustifiable obstacles to market access".

For all theses reasons, mutual recognition has become a common issue for discussion in certification fora. However, there are at present many strong opinions and vested interests that slow the process, as well as complex questions of sustainable forest management in concrete terms in particular regions.

Industry associations are concerned about mutual recognition between certification systems. The Confederation of European Paper Industries (CEPI) published a "Comparative Matrix of Forest Certification Schemes" in 2000 to "address concerns about a number of similar forest certification systems available, which could confuse consumers of forest raw materials and products; create trade barriers; and possibly fail to deliver the credibility promised" (CEPI, 2000). CEPI and the

American Forest and Paper Association and its member organizations and the Canadian Pulp and Paper Association as well as other Canadian associations have initiated mutual recognition between different schemes for reasons similar to CEPI.

In the United States, the American Tree Farm System of the American Forest Foundation, which is a community of 66,000 non-industrialist private forest owners and the Sustainable Forestry Initiative of AF&PA, the forest industry associations have formally recognized each other's standards for sustainable forest management.

There have been efforts to resolve this issue at the national level. For instance, the United Kingdom has set up, after a widespread consultation process, a United Kingdom Forestry Standard and a United Kingdom Woodland Assurance Scheme (UKWAS), both of which are acceptable to all stakeholders. Thus, forests managed according to the United Kingdom Forestry Standard and certified through UKWAS could be eligible for both the FSC and the PEFC logos. Similar strategies are being implemented in some other European countries.

Lack of mutual recognition has delayed progress in certification. Some European wood products manufacturers that are buying certified sawnwood do not sell CFPs. Why? Because without mutual recognition they fear alliance to one label would be perceived as being against another system which may or may not have a label. To avoid jeopardizing their sales, they currently carry no label.

13.7 Conclusion

The market for CFPs is evolving rapidly and continues to create excitement in the forest and forest industry sector. While demand from final consumers is weak, retailers, wholesalers and manufacturers are finding advantages in producing and trading in CFPs, for example as a valuable public relations vehicle. Governments and trade associations see certification as a new communication channel to reach their public and clientele and to assure them about the purchase and use of forest products produced under sustainable forest management. It is not clear to what extent forest management practice has changed as a direct result of certification schemes, notably because their arrival has coincided with changes in the emphasis of forest policy in most ECE region countries.

However, there has been considerable progress from the situation of controversy and doubt which existed a few years ago. A number of national and international certification schemes are in place and certified products are at last reaching the final consumer in significant

Nevertheless, a number of important points are still in doubt, including the following:

- Ultimately, what proportion of forest products will be certified, the great majority or only a small part?
- will national and international systems continue to co-exist?
- will there be mutual recognition or convergence between major systems based on very different fundamental principles (e.g. ISO, FSC, PEFC)?
- who will bear the costs of certification in the future – consumers, wholesalers/retailers or the forest owners?
- will an established supply of certified forest products stimulate the use of wood, thanks to support from environmentally-aware consumers? Or will the higher costs reduce wood's competitivity?
- One certainty is that ECE/FAO will continue to monitor and analyse developments.

Note: A *Geneva Timber and Forest Discussion Paper* is anticipated to update the status of certification and the marketplace for CFPs in the ECE region in 2000.

Chapter 14
Tropical Timber Developments [1]

Highlights

- Tropical forest products markets recovered slightly in 1999 from the recession due to the Asian economic crisis of 1997 to 1998.
- A rapid expansion of Chinese imports, spurred by shortages of domestic raw material, coinciding with a fall in Japanese imports, has made China the world's largest tropical log importer.
- The trade in tropical secondary processed wood products, of which the majority is exported to the ECE region, is growing more rapidly than that of primary products.
- Tropical log and sawnwood prices recovered slightly from the decline caused by the Asian economic crisis although plywood prices remain lower. Teak prices, however, are rising steadily.
- Production and exports of reconstituted wood panels, particularly MDF, in tropical countries shot up and new capacity has been announced, principally in Asia.
- Indonesia continues to be by far the largest producer of tropical plywood, although its share has been declining since production in China, based on imported logs, exploded to 2 million m^3 in 1999.
- Tropical sawnwood production fell during the crisis, especially in Malaysia and Indonesia, and did not recover significantly in 1999.
- Log exports are decreasing as tropical timber producers add value domestically.

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Secretariat introduction

In the context of ongoing inter-organization cooperation between ECE/FAO and ITTO, this chapter was drafted by ITTO market intelligence staff, notably Steve Johnson and Michael Adams. (ITTO draws on ECE/FAO analysis for its own publications). In this way each organization is able to concentrate its resources in its area of comparative advantage while providing a comprehensive service to its clients. The ECE/FAO secretariat expresses its gratitude to ITTO and Drs. Johnson and Adams for their excellent contribution. The terminology, including names of countries, used in this chapter is that used in ITTO.

14.1 Introduction

The major factor affecting the global tropical timber sector (and the timber sector in general) in the past two years was the economic crisis which began in Asia in mid-1997 and which had resulted in negative impacts on all major markets by late 1998. Trade figures show a painful decline for all major products covered by ITTO in 1998. Although signs of economic recovery began to be seen in some Asian countries from late 1998, others remained mired in recession during 1999 and were only slowly recovering in 2000.

Figures for 2000 were not available to ITTO at the time of preparation of this *Review*. While it appears that overall timber consumption in some important markets (i.e. Korea, Japan) is rising this year, much of this increased consumption is of temperate species with tropical timber demand still far below mid-1990s levels and unlikely to recover to these levels.

14.2 Production

14.2.1 Logs

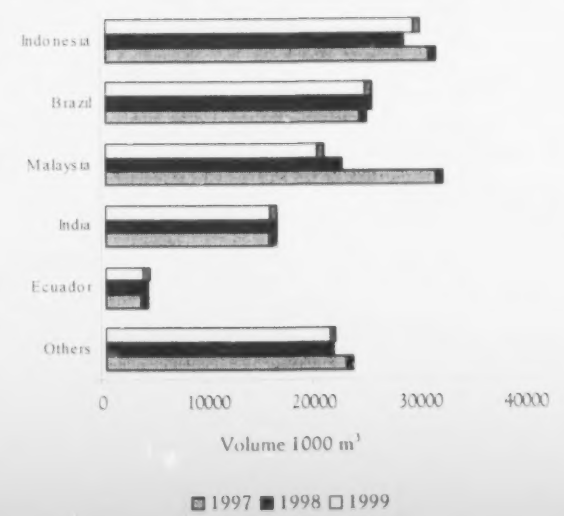
The production of tropical industrial roundwood ("logs") in ITTO producer member countries totalled 126.7 million m^3 in 1997. This total was down 1% from 1996 levels, with a further decrease of 11% to 113 million m^3 in 1998. Log production by ITTO producer member countries rose slightly to 113.4 million m^3 in 1999. Graph 14.2.1 shows ITTO's five major log producers for 1997 to 1999, ranked by 1998 production, as well as aggregate production by all other members. Of the top five, Brazil, India and Ecuador were stable or increasing during the period 1997 to 1999, whereas Malaysian and Indonesian production declined. Malaysian production has fallen from about 33 million m^3 in 1995 to 20 million m^3 in 1999, a reduction of almost 40% in just five years. This decrease reflects lower harvests in both Sabah and Sarawak, with the latter's harvests from its permanent forest estate now at the annual level of 9 million m^3 recommended by the ITTO Mission to Sarawak in 1990. Decreases in Africa and Asia accounted for the sharp decline in 1998 production, as harvests fell due to decreased demand associated with recession in many domestic and export markets.

Graph 14.2.1 illustrates the dominance of the top four tropical log producing countries (Indonesia, Brazil, Malaysia and India) which together comprised almost 80% of ITTO production in 1998 to 1999. Indonesian reports indicate that in recent years, the government has converted 3.4 million hectares of natural forests into plantations, 2.4 million of which are palm oil estates. Most of the cleared forests were classed as secondary degraded and reportedly did not contribute significantly to Indonesian log production. Indonesian log production is probably significantly higher than the estimate given here, however, with some sources estimating the illegal harvest to be almost equal to or even greater than the official figures of under 30 million m^3. Unfortunately, Indonesia, like Brazil and India, has never provided production figures to ITTO, necessitating the use of estimates.

Nine other ITTO producer members (Cameroon, Côte d'Ivoire, Myanmar, Gabon, Papua New Guinea, Peru, Ghana, Colombia and Republic of Congo) had log production exceeding 1 million m^3 in 1998. Six of these countries experienced an increase in production in 1999: PNG (20%), Colombia (19%), Republic of Congo (13%), Côte d'Ivoire (11%), Gabon (5%) and Ghana (5%). The other three countries experienced declines in

GRAPH 14.2.1

Major tropical log producers, 1997-1999



Source: ITTO, 2000.

production: Cameroon (26%), Myanmar (16%) and Peru (9%).

Two ITTO consuming countries possess significant tropical timber resources: Australia and China. Aggregate production from these sources for 1998 was estimated at 305,000 m^3, with the bulk of this coming from China's southern provinces of Hainan Island and Yunnan. Log production from these areas is consumed almost entirely domestically.

The regional breakdown of tropical log production amongst ITTO producer members is given in table 14.2.1; the Asia Pacific region produced 62% of ITTO members' tropical hardwood logs in 1998. Asia's share of ITTO log production was stable in 1999. Africa's share of production remained at about 9% in 1998 to 1999, and Latin American production remained at about 29%.

14.2.2 Sawnwood

Production of tropical sawnwood in ITTO producing countries totalled 33.2 million m^3 in 1998. This was down by 8% from 1997, with an increase of 2% to almost 34 million m^3 in 1999. Africa still suffers from weak infrastructure and environmentally demanding export markets that constrain major investments in wood processing, but production is gradually rising. Latin America increased its production by 1% in 1998, and by a further 2% in 1999. Asian production continued a steady decline, dropping 15% to under 18 million m^3 in 1998 before rising slightly to 18.4 million m^3 in 1999.

Graph 14.2.2 shows the major ITTO producers of tropical sawnwood in the 1997 to 1999 period, ranked by 1998 production. Brazil (9.7 million m^3), India (7 million m^3), Malaysia (5.1 million m^3) and Indonesia (5 million m^3) were the major producers of tropical sawnwood in 1998. While production in Brazil and India was estimated to be relatively stable, Malaysian and Indonesian production dropped sharply in 1998. Malaysia became ITTO's fourth largest tropical sawnwood producer in 1999 after production slid to 5 million m^3 (almost 30% below the 1997 level) as log production fell and available logs were increasingly diverted to veneer and plywood mills. Ecuador is ITTO's fifth largest sawnwood producer, with about 1.7 million m^3 per year.

Six other countries (Côte d'Ivoire, China, Ghana, Peru, Cameroon and Japan) produced over 500,000 m^3 of tropical sawnwood in 1998. Production increased or remained stable in 1999 in all of these countries except Côte d'Ivoire. Thailand's production crashed by 71% in 1998 to about 113,000 m^3, falling further to only 80,000 m^3 in 1999. Thai sawnwood production has fallen due to economic problems in 1997 to 1998 and declining availability of log imports. The Asian region accounted for 54% of sawnwood production in producer countries in 1998 to 1999. Africa's share of ITTO production

TABLE 14.2.1

Tropical forest products production, 1997-1999

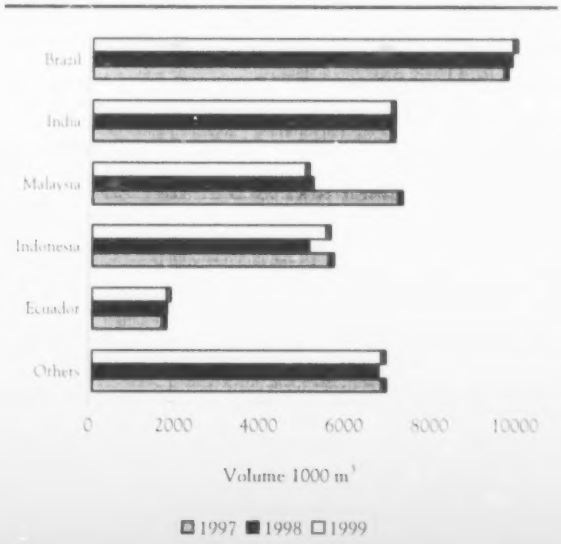
(1,000 m^3)

	1997	*1998*	*1999*
AFRICA			
Logs	11,089	10,476	10,349
Sawnwood	1,998	2,164	2,245
Veneer	464	523	563
Plywood	290	295	299
ASIA PACIFIC			
Logs	84,141	70,258	70,202
Sawnwood	21,158	17,968	18,388
Veneer	1,486	1,078	1,153
Plywood	14,156	12,362	12,581
LATIN AMERICA/CARIBBEAN			
Logs	31,436	32,245	32,840
Sawnwood	12,882	13,054	13,319
Veneer	313	215	221
Plywood	1,510	1,508	1,329
TOTAL			
Logs	126,667	112,979	113,391
Sawnwood	36,038	33,186	33,952
Veneer	2,263	1,816	1,937
Plywood	15,957	14,165	14,208

Source: ITTO, 2000.

GRAPH 14.2.2

Major producers of tropical sawnwood, 1997-1999



Source: ITTO, 2000.

remained at 7%, and Latin America's at around 38% during the same period.

Consuming countries produced 1.9 million m^3 of tropical sawnwood (from domestic or imported logs) in 1998, up 6% from 1997 levels, with most of the increase due to Europe and China. Further increases in China and a recovery of production in the Republic of Korea compensated for a decline in European production and led to a further 1% increase in 1999.

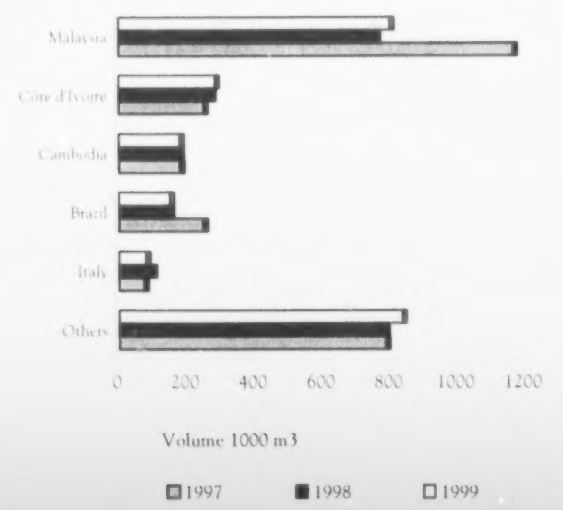
14.2.3 Veneer

Production of veneer in ITTO producing countries totalled 1.8 million m^3 in 1998, dropping nearly 20% from 1997, before rising 7% to over 1.9 million m^3 in 1999. The 1998 decrease was due largely to a drop in Malaysia's veneer production, which fell from almost 1.2 million to 760,000 m^3 between 1996 and 1998.

The Asian region produced almost 1.1 million m^3 of veneer in 1998, Africa produced 523,000 m^3 and Latin America produced 215,000 m^3. Aggregate production rose in Africa and Asia, and Latin America remained stable in 1999. The main ITTO veneer producers in 1997 to 1999 are shown in graph 14.2.3 - Malaysia's dominant (but declining) role is clear from this chart. Côte d'Ivoire is the second largest ITTO producer, with production rising to 285,000 m^3 in 1999. Cambodia (181,000 m^3 in 1998) overtook Brazil as ITTO's third largest tropical veneer producer in 1998. Five other ITTO producer members (Ghana, Cameroon, the Philippines, Republic of Congo and Indonesia) had veneer production of at least 50,000 m^3 in 1998, with Ghana, Republic of Congo and the Philippines reporting increased production in 1999.

GRAPH 14.2.3

Major tropical veneer producers, 1997-1999



Source: ITTO, 2000.

ITTO consuming countries produced 433,000 m^3 of veneer in 1998, down 3% from 1997 levels, with a further drop of 9% in 1999. Production of veneer in consumer countries in 1998 was split between the EU (59%), Japan (17%), and China and Taiwan Province of China (12% each). Japan, China and Taiwan Province of China consume virtually all of the veneer they produce, however, while about one-quarter of the total produced in Europe is re-exported, mainly to other European countries. EU production dropped from 254,000 m^3 in 1998 to 215,000 m^3 in 1999, mostly due to a decline in Italy (the largest EU producer). Japan's production of tropical veneer halved to 75,000 m^3 from 1998 to 1999 as its tropical veneer and plywood industries shrank together with log availability and the economy.

14.2.4 Plywood

Production of plywood in ITTO producing countries totalled 14.2 million m^3 in 1998. Plywood production in producing countries decreased by 11% in 1998 but was stable in 1999 at 14.2 million m^3. Plywood production by Indonesia, the top ITTO producer, dropped 11% from 1997 levels to about 7.8 million m^3 in 1998, increasing to 7.9 million m^3 in 1999. Malaysia's plywood production dropped by 12% in 1998 to 3.9 million m^3, the first annual decrease since Malaysian plywood production began increasing early in this decade. Production increased to 4 million m^3 in 1999. The Asian region produced 12.4 million m^3 of plywood in 1998 (about 88% of total producer member production), Latin America produced just over 1.5 million m^3 (11%) and Africa produced 295,000 m^3 (2%). The three regions consumed 9, 37 and 74% respectively of their production domestically in that year. Asia's low consumption/production ratio is due to the export-led industries of Malaysia and Indonesia. The low domestic utilization of plywood in Asia is an anomaly, with domestic markets consuming a majority or a near majority of all other primary tropical timber products in all three regions.

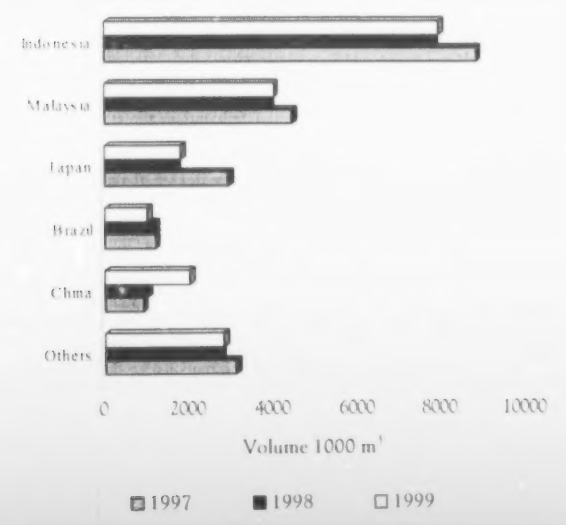
The main ITTO plywood producers in 1997 to 1999 are shown in graph 14.2.4. Indonesia's dominant but declining role is clear from this chart. Tropical plywood production in Japan plummeted by 42% in 1998 before increasing slightly in 1999. Brazilian production has been stable at about 1.2 million m^3 but declined in 1999 to 1 million m^3 as softwood plywood exports strengthened. Chinese production exploded to 2 million m^3 in 1999, the result of a sharp increase in tropical log imports and a corresponding decrease in plywood imports due to a ban on logging in China and reduced log import tariffs.

Taiwan Province of China, France, India and the Republic of Korea all produced at least 300,000 m^3 of tropical plywood in 1998. Thailand, formerly a major tropical plywood producer, reported a 77% drop to 44,000 m^3 as its economic troubles hit in 1997, with a further 11% reduction to 39,000 m^3 in 1998 to 1999.

ITTO consuming countries produced almost 4.2 million m^3 of plywood in 1998 (about 23% of total ITTO production), a 23% drop from 1997. ITTO consuming countries' production rebounded to 5.3 million m^3 in 1999, led by the jump in Chinese production. Most of the drop in 1998 consumer country production is accounted for by Japan and the Republic of Korea, both of which were in recession that year. Japan's tropical plywood production has fallen by 47% since 1995. Japanese domestic plywood production is now well below plywood imports, after 50 years of domestic production exceeding imports ended in 1994. Japanese plywood manufacturers are increasing the proportion of softwoods used in plywood production, as well as investigating lamination and other techniques to allow re-use of concrete form-ply. Several plywood manufacturers have established joint ventures for plywood and other panel production in producer countries. These factors, together with a depressed market and a declining supply of logs, mean that Japanese (and most other consuming countries') production of tropical plywood will continue to decline. Korean tropical plywood production has followed the same downward trend, dropping by 44% since 1995.

GRAPH 14.2.4

Major tropical plywood producers, 1997-1999



Source: ITTO, 2000.

14.2.5 Reconstituted panels

Substantial quantities of reconstituted panel products, particularly MDF, are now being produced in several tropical countries, primarily in Asia. For example, Malaysia now has the capacity to produce 1.2 million m^3 of MDF per year and exported 750,000 m^3 of this product in 1998, up from 200,000 m^3 in 1997. Brazil, Indonesia and Thailand have also seen large increases in their production and trade of reconstituted panel products in recent years. Many new plants in these and other countries are now operational or soon will be to meet the expected surge in demand for such products. There were close to 100 MDF and particleboard mills operating in tropical Asia in 1999, with more (including many joint ventures with companies from non-tropical countries) being announced regularly. While some expansion plans have been scaled back due to the regional crisis in 1997 to 1998, reconstituted panel products will become increasingly important as limits on the growth of plywood production are reached and as more countries move further into downstream processing and attempt to utilize available resources more efficiently. These panels will substitute for plywood and sawnwood in many uses, resulting in decreasing or slower growth in production of these traditional tropical timber products in many countries.

14.3 Exports

The composition of exports for 1997 to 1999 from the ITTO producing regions is shown in tables 14.3.1, 14.3.2, and 14.3.3. The contribution of logs to total tropical timber exports of ITTO producers (in terms of both value and volume in roundwood equivalent (rwe)) has fallen dramatically from over 60% in 1980 to less than a quarter in 1999. Only Africa continues to export a higher volume equivalent of logs than processed products, with log exports making up 42% of log production and 58% of total roundwood equivalent export volume in 1998. The Asia Pacific region is rapidly replacing log exports with the export of processed products, spurred by Indonesian plywood exports and Malaysian exports of sawnwood, veneer and plywood. Asian log exports made up 19% of total Asian export volume in 1998 (11% of log production). Latin American log exports are a small fraction of both production and total exports. Total roundwood equivalent export volume as a percentage of log production decreased from 12% to 8% in Latin America in the period 1997 to 1999, fell from 76% to 72% in Africa, but increased in Asia from 56% to 61%. Total ITTO producer member exports (rwe) fell 10% from 59.7 million m^3 to 53 million m^3 in 1997 to 1999, due to declining exports of logs, sawnwood and plywood by many countries.